

# NICHOLAS MAXWELL

## Curriculum Vitae

**Born:** 3 July 1937.

**Schools:** Monkton Wylde and Bedales.

**National Service:** Royal Army Educational Corps 1958-60.

**University Education:** University College London (Mathematics).  
Manchester University (Philosophy).  
London School of Economics (Philosophy).

**Degrees:** B.A. (Hons) Philosophy II (i), Manchester University, 1963.  
M.A. Philosophy (by thesis), Manchester University, 1965.

**University Appointments:**

1. Lecturer in Philosophy of Science in the Department of Philosophy, Manchester University, 1965-66.
2. Lecturer in Philosophy of Science, University College London, 1966-93.
3. Visiting Research Fellow, Center for the Philosophy of Science, University of Pittsburgh, Sept. 1987 to April 1988.
4. Reader in Philosophy of Science, University College London, 1993-94.
5. Emeritus Reader, University of London, 1994-.
6. Academic Visitor, Department of Philosophy, Logic and Scientific Method, London School of Economics, 1994-97.
7. Visiting Scholar, Center for Philosophy of Science, University of Pittsburgh, Spring 1999, funded by grant from the British Academy.
8. Tutor, Department of Continuing Education, Oxford University, 2000-2003.
9. Honorary Senior Research Fellow, Department of Education and Professional Development, University College London, 2002-5.

Committee Member and Secretary of the British Society for the Philosophy of Science, 1969-71.

Referee for such physics and philosophy of science journals as *Foundations of Physics*, *The British Journal for the Philosophy of Science*, *Philosophy of Science*.

**Departmental Tutor:** 1983-93. **Graduate Tutor:** 1993-94.

**Teaching: Undergraduate:** I have given two half-unit Undergraduate Courses in Philosophy of Science in the HPS Department at UCL from 1973 to 1994. One was entitled *The Aims, Methods and Value of Science and Technology*; the other was entitled *Philosophy of Science*, and was concerned with problems that arise from the attempt to understand our human world as a part of the physical universe. The two courses could be put together to form a one-unit

course.

**Teaching: Graduate.** From 1966 to 1972 I taught Epistemology and Metaphysics as a part of the M.Sc. Programme in HPS at UCL with my then colleagues Paul Feyerabend and Larry Laudan. Since the rebirth of the M.Sc. Programme at UCL in 1974 I have taught the main Philosophy of Science course till my departure in 1994.

**Supervision of Ph.D. Students.** During my time at UCL I have supervised a number of M.Phil and Ph.D. students, among them:

Marcus de Oliveira; Popper's Philosophy of Science: Ph.D.

Joseph Yakubu; Indigenous Science in Ghana: Ph.D.

Louis Marinoff; Games theory: Ph.D; Katherine Crawley; Epistemological and Methodological Problems of the Scientific Revolution, Ph.D.; Ali Paya; Scientific Realism, Ph.D.; Matthew Iredale; Science and Free Will, Ph.D.

**Seminars.** During my time at UCL I have been responsible for three different Departmental Seminars.

1. **Graduate Seminar:** 1970 -1993. A lively seminar for graduate students from the UCL HPS Department, and from other Departments in HPS in the University of London.

2. **Interdisciplinary Science Seminar:** A Research Seminar for members of staff at UCL, which ran for a number of years, and was devoted to interdisciplinary problems. This attracted people from a range of Departments, such as History, Anthropology, Psychology, Mathematics. It spawned at least one book: Norman Dixon's *Our Own Worst Enemy*, Jonathan Cape, 1987.

3. **Departmental Seminar:** 1982-1993. Scholars from a variety of disciplines have given talks to the Seminar over the years, including almost all the leading figures in philosophy of science in the country during the period in question.

**Influence on UCL** The UCL website, under “research”, speaks of “The Wisdom Agenda” ([www.ucl.ac.uk/research](http://www.ucl.ac.uk/research) , accessed 16 Jan 2012), and there is a document that can be downloaded, spelling out UCL’s commitment to “transforming knowledge into wisdom” ([www.ucl.ac.uk/research/wisdom-agenda/2011-wisdom-agenda.pdf](http://www.ucl.ac.uk/research/wisdom-agenda/2011-wisdom-agenda.pdf), accessed 16 Jan 2012).

**Friends of Wisdom:** Founder of Friends of Wisdom, a group which seeks to help change academic inquiry so that its basic aim becomes to help humanity acquire wisdom: see <http://www.ucl.ac.uk/friends-of-wisdom>

**Website:** <http://www.ucl.ac.uk/from-knowledge-to-wisdom>

**Publications online:** <http://philpapers.org/profile/17092>

<http://discovery.ucl.ac.uk/view/people/ANMAX22.date.html>

[http://scholar.google.co.uk/citations?user=0\\_YXYUUA-AAJ&hl=en](http://scholar.google.co.uk/citations?user=0_YXYUUA-AAJ&hl=en)

[ResearchGate](#)

[PhilSci Archive](#)

**Publications at UCL Website:**

<https://research-reports.ucl.ac.uk/RPSDATA.SVC/pubs/ANMAX22>

## Nicholas Maxwell: List of Publications

### Books

- 1974 Can there be Necessary Connections between Successive Events?, in *The Justification of Induction*, edited by R. Swinburne, Oxford University Press, London, 1974, pp. 149-74. (Reprint of paper published in 1968.)
- 1976 *What's Wrong With Science? Towards a People's Rational Science of Delight and Compassion*, Bran's Head Books, Frome, England, pp. xi + 260.
- 1984 *From Knowledge to Wisdom: A Revolution in the Aims and Methods of Science*, Basil Blackwell, Oxford, 1984, pp. viii + 299.
- 1985 Methodological Problems of Neuroscience, in *Models of the Visual Cortex*, edited by D. Rose and V.G. Dobson, John Wiley and Sons, Chichester, pp. 11-21.  
<http://discovery.ucl.ac.uk/1345060/>
- 1987 *From Knowledge to Wisdom: A Revolution in the Aims and Methods of Science*, second edition, paperback, Basil Blackwell, Oxford, 1987, pp. viii + 299.
- 1991 How Can We Build a Better World? In *Einheit der Wissenschaften: Internationales Kolloquium der Akademie der Wissenschaften zu Berlin, 25-27 June 1990*. J. Mittelstrass (editor). (Berlin and New York: Walter de Gruyter.) pp. 388-427.
- 1993 Beyond Fapp: Three Approaches to Improving Orthodox Quantum Theory and An Experimental Test, in *Bell's Theorem and the Foundations of Modern Physics*, edited by A. van der Merwe, F. Selleri and G. Tarozzi, World Scientific, pp. 362-370.
- 1994 Towards a New Enlightenment: What the task of Creating Civilization has to learn from the Success of Modern Science, in *Academic Community: Discourse or Discord?*, edited by R. Barnett, Jessica Kingsley, pp. 86-105.
- 1995 A Philosopher Struggles to Understand Quantum Theory: Particle Creation and Wavepacket Reduction, in *Fundamental Problems in Quantum Physics*, edited by M. Ferrero and A. van der Merwe, Kluwer Academic, pp. 205-214.
- 1997 Must Science Make Cosmological Assumptions if it is to be Rational?, in *The Philosophy of Science: Proceedings of the Irish Philosophical Society Spring Conference*, edited by T. Kelly, Irish Philosophical Society, Maynooth, 1997, pp. 98-146.
- 1998 *The Comprehensibility of the Universe: A New Conception of Science*, Oxford University Press, Oxford, pp i-xv + 316.
- 2001 *The Human World in the Physical Universe: Consciousness, Free Will and Evolution*, Rowman and Littlefield, Lanham, Maryland, 2001.
- 2002 Karl Raimund Popper, in *British Philosophers, 1800-2000*, edited by P. Dematteis, P. Fosl and L. McHenry, Brucoli Clark Layman, Columbia, 2002, pp. 176-194.

- 2003 a *The Comprehensibility of the Universe: A New Conception of Science*, Oxford University Press, Oxford, pp i-xv + 316, paperback edition.
- 2003 b Art as Its Own Interpretation, in *Interpretation and Its Objects: Studies in the Philosophy of Michael Krausz* edited by Andreea Ruvoi, Rodopi, Amsterdam, pp. 269-83.
- 2004 a A Critique of Popper's Views on Scientific Method, in *Popper: Critical Assessments of Leading Philosophers, Vol. II, Part 3*, edited by Anthony O'Hear, Routledge, London, pp. 463-487 (reprint of Maxwell, 1972a).
- 2004 b *Is Science Neurotic?*, Imperial College Press, London.
- 2006 a Special Relativity, Time, Probabilism and Ultimate Reality, in *The Ontology of Spacetime*, edited by D. Dieks, Elsevier, B. V., 2006, pp. 229-245.
- 2006 b Learning to Live a Life of Value, in *Living a Life of Value*, edited by J. Merchey, Values of the Wise Press, 2006, pp. 383-95.
- 2006 c Practical Certainty and Cosmological Conjectures, in *Is there Certain Knowledge?*, ed. Michael Rahnfeld, Leipziger Universitätsverlag, Leibzig, 2006, pp. 44-59.
- 2006 d The Enlightenment Programme and Karl Popper, in *Karl Popper: A Centenary Assessment. Volume 1: Life and Times, Values in a World of Facts*, ed. I. Jarvie, K. Milford and D. Miller, chapter 11, Ashgate, London, pp. 177-190.
- 2007 a The Enlightenment, Popper and Einstein, in *Knowledge and Wisdom: Advances in Multiple Criteria Decision Making and Human Systems Management*, Y. Shi et al. (eds.), IOS Press, 2007, pp. 131-148.
- 2007 b The Disastrous War against Terrorism: Violence versus Enlightenment, ch. 3 of *Terrorism Issues: Threat Assessment, Consequences and Prevention*, ed. Albert W. Merkidze, Nova Science Publishers, New York, 2007, pp. 111-133.
- 2007 c *From Knowledge to Wisdom: A Revolution for Science and the Humanities*, Pentire Press, London, pp. xii + 472 (2<sup>nd</sup> edition).
- 2008 a *Wisdom in the University*, edited with Ronald Barnett, Routledge, London, 2008. Includes editorial, pp. vii-viii; and my From knowledge to wisdom: the need for an academic revolution, pp. 1-33 (reprint of paper published in *London Review of Education* in 2007).
- 2008 b Contribution to *How to Think About Science*, Ideas Transcripts, David Cayley, ed., Canadian Broadcasting Corporation, Toronto, 2008, pp. 212-220 (text of broadcast on 18 June 2008).
- 2009 a How Can Life of Value Best Flourish in the Real World?, in *Science and the Pursuit of Wisdom: Studies in the Philosophy of Nicholas Maxwell*, edited by Leemon McHenry, Ontos Verlag, Frankfurt, 2009, pp. 1-56.

- 2009 b Replies and Reflections, in *Science and the Pursuit of Wisdom: Studies in the Philosophy of Nicholas Maxwell*, edited by Leemon McHenry, Ontos Verlag, Frankfurt, 2009, pp. 249-313.
- 2009 c *What's Wrong With Science? Towards a People's Rational Science of Delight and Compassion*, Pentire Press, London (2<sup>nd</sup> edition, with new preface)
- 2009 d From Knowledge to Wisdom, in *Ideas on the Nature of Science*, edited by David Cayley, Goose Lane Editions, New Brunswick, Canada, 2009, pp. 360-78.
- 2010 a We Urgently Need an Academic Revolution, in *How to Achieve a Heaven on Earth*, edited by John E. Wade II, Pelican Publishing Co., Gretna, Louisiana, pp. 269-71.
- 2010 b *Cutting God in Half – And Putting the Pieces Together Again: A New Approach to Philosophy*, Pentire Press, London, pp. x + 370.
- 2010 c The Urgent Need for an Academic Revolution, in *History at the End of the World? History, Climate Change and the Possibility of Closure*, edited by Mark Levene, Rob Johnson, Richard Maguire, Humanities-Ebooks, Tirril, Penrith, pp. 80-93.
- 2010 d The Urgent Need for an Academic Revolution: From Knowledge to Wisdom, text of key note address given on 20 May 2010 at a Conference at Poznan University of Technology, Poland, in *III International Interdisciplinary Technical Conference of Young Scientists: Proceedings*, ed. W. Karpiuk and K. Wisniewski, Poznan, 2010, pp. 19-30.
- 2010 e The Urgent Need For An Academic Revolution: The Rational Pursuit Of Wisdom, in *Death And Anti-Death, Volume 7: Nine Hundred Years After St. Anselm (1033-1109)*, ed. Charles Tandy, Ria University Press, Palto Alto, California, ch. 7, pp. 211-38.
- 2011 a Is the Quantum World Composed of Propensitons?, in *Probabilities, Causes and Propensities in Physics*, edited by Mauricio Suárez, Synthese Library, Springer, Dordrecht, pp. 221-243.
- 2011 b A Priori Conjectural Knowledge in Physics, in *What Place for the A Priori?*, edited by Michael Shaffer and Michael Veber, Open Court, Chicago, pp. 211-240.
- 2011 c The Urgent Need for an Academic Revolution: From Knowledge to Wisdom, Conference Keynote Lecture, *The Role and Values of The University in a New Era* Conference Proceedings, National Taiwan Normal University, pp. 15-31.
- 2012 a Creating a Better World: Towards the University of Wisdom, in R. Barnett, ed., *The Future University: Ideas and Possibilities*, Routledge, New York, 2012, pp. 123-138.
- 2012 c How Universities Can Help Humanity Learn How to Resolve the Crises of Our Times - From Knowledge to Wisdom: The University College London Experience, *Handbook on the Knowledge Economy*, vol. 2, ed. G. Heam, T. Katlelle and D. Rooney, Edward Elgar, Cheltenham, pp. 158-179.

- 2012 d Our Global Problems And What We Need To Do About Them, in Tandy, C., and J. Lee, ed., *Death and Anti-Death Anthology*, vol. 10: *Ten Years After John Rawls (1921-2002)*, Ch. 7, pp. 131-174, Ria University Press, Palo Alto, California.  
Dec 25 ISBN-13: **978-1934297162**
- 2013 a Has Science Established that the Cosmos is Physically Comprehensible?, *Recent Advances in Cosmology*, Travena, A and Soen, B. (eds), Nova Publishers Inc, New York, Chapter One, pp. 1-56.  
1. [Recent advances in cosmology](#) **BOOK ISBN:** 978-1-62417-943-3 **Publication year(s):** 2013 **Author/Editor:** Travena, Anderson ; Soren, Brady
- 2013 b Taking the Nature of God Seriously, in *Models of God and Other Ultimate Realities*, ed. Jeanine Diller and Asa Kasher, Springer 2013, pp. 585-597.
- 2013 c Wisdom: Object of Study or Basic Aim of Inquiry in M. Ferrari and N. Weststrate, eds., *The Scientific Study of Personal Wisdom*, Springer, ch. 14, pp. 299-322.  
Publication Date: **25 Dec 2012** | ISBN-10: **9048192307** | ISBN-13: **978-9048192304**  
| Edition: **2013**
- 2014 a *How Universities Can Help Create a Wiser World: The Urgent Need for an Academia Revolution*, Imprint Academic, Exeter.
- 2014 b What Philosophy Ought to Be, C. Tandy, ed., 2014, *Death And Anti-Death, Volume 11: Ten Years After Donald Davidson (1917-2003)*, Ria University Press, Palo Alto, California, ch. 7, pp. 125-162.
- 2014 c *Global Philosophy: What Philosophy Ought to Be*, Imprint Academic, Exeter, 1st October 2014.
- 2015 What's Wrong with Science and Technology Studies? What Needs to Be Done to Put It Right?, in Raffaele Pisano, ed., *A Bridge between Conceptual Frameworks: Sciences, Society and Technology Studies*, Springer, Dordrecht, 2015, pp. vii-xxxvii. : <http://discovery.ucl.ac.uk/1400296/>
- 2016 a Can Scientific Method Help Us Create a Wiser World?, in N. Dalal, A. Intezari and M. Heitz, ed., *Practical Wisdom in the Age of Technology: Insights, Issues and Questions for a New Millennium*, Routledge, London, ch. 11, pp. 147-161.  
<http://discovery.ucl.ac.uk/1458254/>
- 2016 b Popper's Paradoxical Pursuit of Natural Philosophy, in *Cambridge Companion to Popper*, edited by Jeremy Shearmur and Geoffrey Stokes, Cambridge University Press, Cambridge, ch. 7, pp. 170-207. (Deposited UCL Discovery 14/04/16)
- 2017a Relativity Theory may not have the last Word on the Nature of Time: Quantum Theory and Probabilism, in *Space, Time and the Limits of Human Understanding*, ed. G. Ghirardi and S. Wuppuluri, Springer, pp. 109-124.
- 2017 b *Understanding Scientific Progress*, Paragon House, Saint Paul, Minnesota, USA.  
<http://www.paragonhouse.com/Understanding-Scientific-Progress-Aim-Oriented-Empiricism.html>

- 2017 c *In Praise of Natural Philosophy: A Revolution for Thought and Life*, McGill-Queen's University Press, Montreal, Quebec, Canada  
[http://www.mqup.ca/in-praise-of-natural-philosophy-products-9780773549036.php?page\\_id=119040&](http://www.mqup.ca/in-praise-of-natural-philosophy-products-9780773549036.php?page_id=119040&)
- 2017 e *Karl Popper, Science and Enlightenment*, UCL Press, London.
- 2018 a Do We Need an Academic Revolution to Create a Wiser World?, in R. Barnett & M. A. Peters, eds., *The Idea of the University: Volume 2: Contemporary Perspectives*, Peter Lang, New York, chapter 28.
- 2018 b Could Inelastic Interactions Induce Quantum Probabilistic Transitions? in Shan Gao, ed., *Collapse of the Wave Function*, Cambridge University Press, Cambridge, ch. 14, pp. 257-273.
- 2019 a *Science and Enlightenment: Two Great Problems of Learning*, Springer, Cham, Switzerland, February 2019.
- 2019 b *The Metaphysics of Science and Aim-Oriented Empiricism: A Revolution for Science and Philosophy*, Sythese Library, Springer, Cham, Switzerland, March 2019.
- 2019 c The Urgent Need for Social Wisdom, Chapter 33, 754-80, *The Cambridge Handbook of Wisdom*, ed. Robert Sternberg and Judith Glück, CUP,
- 2019 d How Wisdom Can Help Solve Global Problems, *Applying Wisdom to Contemporary World Problems*, eds., R. Sternberg, H. Nusbaum and J. Glück, Palgrave Macmillan, London, ch. 13, pp. 337-380.

### **Forthcoming**

### **Articles in Refereed Journals**

- 1966 Physics and Common Sense, *The British Journal for the Philosophy of Science* 16, 1966, pp. 295-311.
- 1968 a Can there be Necessary Connections between Successive Events?, *The British Journal for the Philosophy of Science* 19, 1968, pp. 1-25.
- 1968 b Understanding Sensations, *Australasian Journal of Philosophy* 46, 1968, pp. 127-46
- 1969 a Review of I. Lakatos and A. Musgrave (eds.) *Problems in the Philosophy of Science* (1968), *The British Journal for the Philosophy of Science* 20, 1969, pp. 81-3.
- 1971 a Clash of Ideas (review of I. Lakatos and A. Musgrave (eds.) *Criticism and the Growth of Knowledge* (1970)), *Nature* 231, 1971, p. 269.
- 1971 b Review of R. J. Blackwell, *Discovery in the Physical Sciences* (1969), *The British Journal for the Philosophy of Science* 22, 1971, pp. 387-9.

- 1972 a A Critique of Popper's Views on Scientific Method, *Philosophy of Science* 39, 1972, pp. 131-52.
- 1972 b A New Look at the Quantum Mechanical Problem of Measurement, *American Journal of Physics* 40, 1972, pp. 1431-5.
- 1973 a Alpha Particle Emission and the Orthodox Interpretation of Quantum Mechanics, *Physics Letters* 43A, 1973, pp. 29-30.
- 1973 b The Problem of Measurement - Real or Imaginary?, *American Journal of Physics* 41, 1973, pp. 1022-5.
- 1974 a The Rationality of Scientific Discovery, Part I: The Traditional Rationality Problem, *Philosophy of Science* 41, 1974, pp. 123-53.
- 1974 b The Rationality of Scientific Discovery, Part II: An Aim Oriented Theory of Scientific Discovery, *Philosophy of Science* 41, 1974, pp. 247-95.
- 1975 Does the Minimal Statistical Interpretation of Quantum Mechanics Resolve the Measurement Problem?, *Methodology and Science* 8, 1975, pp. 84-101.
- 1976 a Towards a Micro Realistic Version of Quantum Mechanics, Part I, *Foundations of Physics* 6, 1976, pp. 275-92.
- 1976 b Towards a Micro Realistic Version of Quantum Mechanics, Part II, *Foundations of Physics* 6, 1976, pp. 661-76.
- 1977 Articulating the Aims of Science, *Nature* 265, 6 January, 1977, p. 2.
- 1979 Induction, Simplicity and Scientific Progress, *Scientia* 114, 1979, pp. 629-53. (Italian translation, pp. 655-74.)
- 1980 Science, Reason, Knowledge and Wisdom: A Critique of Specialism, *Inquiry* 23, pp. 19-81.
- 1982 Instead of Particles and Fields: A Micro Realistic Quantum "Smearon" Theory, *Foundations of Physics* 12, 1982, pp. 607-31.
- 1983 From Knowledge to Wisdom, *The Ethical Record*, Vol. 88, No. 1, January 1983, p. 10.
- 1984 From Knowledge to Wisdom: Guiding Choices in Scientific Research. Delivered as a lecture by invitation to the Annual Meeting of the AAAS, New York, May, 1984, and published in *Bulletin of Science, Technology and Society* 4, 1984, pp. 316-34.
- 1985 a From Knowledge to Wisdom: the Need for an Intellectual Revolution, *Science, Technology and Society Newsletter* 21, 1985, pp. 55-63.
- 1985 b Are Probabilism and Special Relativity Incompatible?, *Philosophy of Science* 52, 1985, pp. 23-43.



- 1986 a The Fate of the Enlightenment: Reply to Kekes, *Inquiry* 29, 1986, pp. 79-82.
- 1986 b Theoretical choices, *Nature* 321, No. 6067, 15-21 May, p. 191.
- 1987 Wanted: a new way of thinking, *New Scientist*, 14 May 1987, p. 63.
- 1988 a Quantum Propensiton Theory: A testable Resolution of the Wave/Particle Dilemma, *The British Journal for the Philosophy of Science* 39, 1988, pp. 1-50.
- 1988 b Reply to Bidon-Chanal, *Critique of Anthropology* 8, 1988, pp. 109-12.
- 1988 c Are Probabilism and Special Relativity Compatible?, *Philosophy of Science* 55, 1988, pp. 640-5.
- 1992 a What Kind of Inquiry Can Best Help Us Create a Good World?, *Science, Technology and Human Values* 17, 1992, pp. 205-27.
- 1992 b What the Task of Creating Civilization has to Learn from the Success of Modern Science: Towards a New Enlightenment, *Reflections on Higher Education* 4, 1992, pp. 47-69.
- 1993 a Does Orthodox Quantum Theory Undermine, or Support, Scientific Realism?, *The Philosophical Quarterly* 43, 1993, pp. 139-57.
- 1993 b Can Academic Inquiry help Humanity become Civilized?, *Philosophy Today* 13, May 1993, pp. 1-3.
- 1993 c Induction and Scientific Realism: Einstein versus van Fraassen. Part One: How to Solve the Problem of Induction, *British Journal for the Philosophy of Science* 44, 1993, pp. 61-79.
- 1993 d Induction and Scientific Realism: Einstein versus van Fraassen. Part Two: Aim-Oriented Empiricism and Scientific Essentialism, *British Journal for the Philosophy of Science* 44, 1993, pp. 81-101
- 1993 e Induction and Scientific Realism: Einstein versus van Fraassen. Part Three: Einstein, Aim-Oriented Empiricism and the Discovery of Special and General Relativity, *British Journal for the Philosophy of Science* 44, 1993, pp. 275-305.
- 1993 f Science for Civilization, *The Ethical Record* 98, 1993, pp. 12-17.
- 1993 g On Relativity Theory and Openness of the Future: A Reply, *Philosophy of Science* 60, 1993, pp. 341-348.
- 1993 h Mental blocks and the force of habit: review of *Paradigms and Barriers* by H. Margolis, *The Times Higher Education Supplement*, No. 1104, 31 December, 1993, p. 24.
- 1994 Particle Creation as the Quantum Condition for Probabilistic Events to Occur, *Physics*

*Letters A 187*, 1994, pp. 351-355.

- 1995 The Evolution of Consciousness, *The Ethical Record*, Vol. 100, No. 4, April 1995, pp. 16-19.
- 1996 Are there Objective Values?, *The Ethical Record*, vol. 101, No. 4, April 1996.
- 1997 Science and the environment: A new enlightenment, *Science and Public Affairs*, Spring 1997, pp. 50-56.
- 1998 Is the Universe Comprehensible?, *The Ethical Record*, vol. 192, No. 3, March 1998, pp. 3-6.
- 1999 a Has Science Established that the Universe is Comprehensible?, *Cogito 13*, 1999, pp. 139-145.
- 1999 b Are there Objective Values?, *The Dalhousie Review*, 79 (3) pp. 301 - 317
- 2000 a The Mind-Body Problem and Explanatory Dualism, *Philosophy 75*, 2000, pp. 49-71.
- 2000 b Can Humanity Learn to become Civilized? The Crisis of Science without Civilization, *Journal of Applied Philosophy 17*, 2000, pp. 29-44.
- 2000 c Observation, meaning and theory, *Times Higher Education Supplement*, no. 1,427, 17 March, p. 30.
- 2000 d A new conception of science, *Physics World 13*, No. 8, 2000, pp. 17-18.
- 2001 a Weinert's Review of 'The Comprehensibility of the Universe', *Philosophy 76*, 2001, pp. 297-303.
- 2001 b Wisdom and curiosity? I remember them well, *The Times Higher Education Supplement*, No. 1,488, 25 May 2001, p. 14.  
<http://www.timeshighereducation.co.uk/news/wisdom-and-curiosity-i-remember-them-well/160592.article>
- 2001 c Can Humanity Learn to Create a Better World? The Crisis of Science without Wisdom, in *The Moral Universe*, edited by Tom Bentley and Daniel Stedman Jones, *Demos Collection 16*, 2001, pp. 149-156.
- 2002 a Cutting God in Half, *Philosophy Now 35*, March/April 2002, pp. 22-25.
- 2002 b Science and meaning: why physics can coexist with consciousness, *The Philosophers' Magazine 18*, Spring 2002, pp. 15-16.
- 2002 c Is Science Neurotic? *Metaphilosophy 33*, no. 3, April 2002, pp. 259-299.
- 2002 d The Need for a Revolution in the Philosophy of Science, *Journal for General Philosophy of Science 33*, 2002, pp. 381-408. Number 2.

- 2002 e Three Philosophical Problems about Consciousness, *Ethical Record* 107, No. 4, May 2002, pp. 3-11.
- 2003 a Two Great Problems of Learning, *Teaching in Higher Education* 8, January 2003, pp. 129-134.
- 2003 b Science, Knowledge, Wisdom and the Public Good, *Scientists for Global Responsibility Newsletter* 26, February 2003, pp. 7-9.
- 2003 c Do Philosophers Love Wisdom, *The Philosophers' Magazine*, Issue 22, 2<sup>nd</sup> quarter, 2003, pp. 22-24.
- 2004 a In Defence of Seeking Wisdom, *Metaphilosophy* 35, October 2004, pp. 733-743.
- 2004 b Does Probabilism Solve the Great Quantum Mystery?, *Theoria* vol. 19/3, no. 51, pp. 321-336.  
[https://www.academia.edu/2975222/Dispositions Causes and Propensities in Science?auto\\_accept\\_coauthor=true](https://www.academia.edu/2975222/Dispositions_Causes_and_Propensities_in_Science?auto_accept_coauthor=true)
- 2005 a Science versus Realization of Value, Not Determinism versus Choice, *Journal of Consciousness Studies* vol. 12, no. 1, pp. 53-58.
- 2005 b A Revolution for Science and the Humanities: From Knowledge to Wisdom, *Dialogue and Universalism*, vol. XV, no. 1-2, pp. 29-57.
- 2005 c Popper, Kuhn, Lakatos and Aim-Oriented Empiricism, *Philosophia* 32, nos. 1-4, pp. 181-239.
- 2005 d Is Science Neurotic?, *Philosophy Now*, Issue 51, June/July 2005, pp. 30-33.
- 2005 e Science under Attack, *The Philosopher's Magazine*, Issue 31, 3<sup>rd</sup> Quarter 2005, pp. 37-41.
- 2005 f Philosophy Seminars for Five-Year-Olds, *Learning for Democracy*, Vol. 1, No. 2, 2005, pp. 71-77.
- 2006 a Knowledge to Wisdom: We Need a Revolution, *Philosophia* 34, pp. 377-8.
- 2006 b Three Problems about Consciousness and their Possible Resolution, PMS WIPS 005 Nov 15, 2006, <http://www.petemandik.com/blog/?s=maxwell>
- 2007 a Philosophy Seminars for Five Year Olds, *Gifted Education International*, Vol. 22, No. 2/3, pp. 122-7 (reprint of 2005 article).
- 2007 b Can the World Learn Wisdom?, *Solidarity, Sustainability, and Non-Violence*, vol. 3, no. 4, April 2007, <http://www.pelicanweb.org/solisustv03n04maxwell.html>
- 2007 c From Knowledge to Wisdom: The Need for an Academic Revolution, *London Review of Education*, vol. 5, no. 2, 2007, pp. 97-115.  
(Republished in Polish in *Nauka i Szkolnictwo Wyższe*, nr 2/38/2011.)

- 2007 d Wisdom in the university: editorial, with Ronald Barnett, *London Review of Education*, vol. 5, no. 2, 2007, pp. 95-6.
- 2007 e Reply to Donald Stanley's Review of *Is Science Neurotic?*, *Metapsychology*, vol. 11, no. 30, 24<sup>th</sup> July 2007, <http://www.mentalhelp.net/books/books.php?type=de&id=3746> .
- 2008 a The road to wisdom, *New Statesman*, vol. 137, no. 4880, 21 January 2008, p. 50.
- 2008 b Are Philosophers Responsible for Global Warming?, *Philosophy Now*, issue 65, January/February 2008, pp. 12-13.
- 2008 c Cutting God in Half, *Ethical Record*, vol. 113, no. 5, May 2008, pp. 3-6.
- 2008 d Do We Need a Scientific Revolution?, *Journal for Biological Physics and Chemistry*, vol. 8, no. 3, September 2008, pp. 95-105.
- 2009 a The Metaphysics of Science: An Account of Modern Science in Terms of Principles, Laws and Theories (review of book by Craig Dilworth), *International Studies in the Philosophy of Science*, vol. 23, no. 2, July 2009, pp. 228-232.
- 2009 b Are Universities Undergoing an Intellectual Revolution?, *Oxford Magazine*, No. 290, Eighth Week, Trinity Term, June 2009, pp. 13-16.
- 2009 c Muller's Critique of the Argument for Aim-Oriented Empiricism, *Journal for General Philosophy of Science*, vol. 40, 2009, pp. 103-114.
- 2009 c What's Wrong With Science?, *Sublime*, Issue 17, 2009, pp. 90-93.
- 2010 a Universities: from knowledge to wisdom, *Scientists for Global Responsibility Newsletter*, Issue 38, pp. 18-20.
- 2010 b Review of *Science, Policy, and the Value-Free Ideal* by Heather Douglas, *Metapsychology*, [http://metapsychology.mentalhelp.net/poc/view\\_doc.php?type=book&id=5434&cn=394](http://metapsychology.mentalhelp.net/poc/view_doc.php?type=book&id=5434&cn=394)
- 2010 c Scientists should stop deceiving us, *The Guardian*, 12 March, 2010, p. 35. <http://www.guardian.co.uk/commentisfree/2010/mar/12/philosophy-of-science-climate-change>
- 2010 d Wisdom-inquiry, *The Philosophers' Magazine*, Issue 50, pp. 84-85, one of the 50 best ideas of the 21<sup>st</sup> century. <http://www.philosophypress.co.uk/?p=1615>
- 2010 e Reply to Comments on *Science and the Pursuit of Wisdom*, *Philosophia*, Vol. 38, Issue 4, 2010, pp. 667-690; published online, 24 July 2010.
- 2010 f Wisdom Mathematics, *Friends of Wisdom Newsletter*, No. 6, 2010, pp. 1-6; <http://www.knowledgetowisdom.org/Newsletter%206.pdf> .
- 2011 a We Need an Academic Revolution, *Oxford Magazine*, No. 309, pp. 15-18.

- 2011 b Do We Need a Scientific Revolution?, *Mother Pelican: A Journal of Sustainable Development*, vol. 7, no. 5, May 2011, [www.pelicanweb.org/solisustv07n05page4.html](http://www.pelicanweb.org/solisustv07n05page4.html) (reprint of article first published in 2008).
- 2011 c Three Philosophical Problems about Consciousness and their Possible Resolution, *Open Journal of Philosophy*, vol. 1, no. 1, pages 1-10.
- 2012 a Looking for ultimate explanations in the wrong place, review of M. Heller, *Ultimate explanations of the cosmos*, *Metascience*, vol. 21, issue 1, pp 95-97.
- 2012 b The Menace of Science without Civilization: From Knowledge to Wisdom, Text of Keynote Lecture given in Warsaw 20 May 2011, published in *Dialogue and Universalism*, no. 3, 2012, pp. 39-63.
- 2012 c Replies to Criticisms and Comments (For criticisms and comments see *Dialogue and Universalism*, no. 3, 2012, pp. 65-132). Published in *Dialogue and Universalism*, no. 3, 2012, pp. 133-152.
- 2012 d Arguing for Wisdom in the University: An Intellectual Autobiography, *Philosophia*, vol. 40, no. 4, pp. 663-704.
- 2012 e In Praise of Natural Philosophy: A Revolution for Thought and Life, *Philosophia*, vol. 40, no. 4, pp. 705-715 .
- 2012 f The Menace of Science without Wisdom, *Ethical Record*, vol. 117, no. 9, October 2012, pp. 10-15.
- 2012 g A Revolution in Universities, *Bedales Association and Old Bedalian Newsletter*, p. 19, <http://www.bedales.org.uk/media/83/8683-old-bedalian-newsletter-2012.pdf>
- 2012 h The Urgent Need for an Academic Revolution, ElgarBlog: Edward Elgar Publishing blog <http://elgarblog.wordpress.com/2012/09/03/the-urgent-need-for-an-academic-revolution/#more-974>
- 2013 a Misconceptions Concerning Wisdom, *Journal of Modern Wisdom*, vol. 2, March 2013, pp. 92-97.
- 2013 b From Knowledge to Wisdom: Assessment and Prospects After Three Decades, *Integral Review*, vol. 9, no. 2, June, pp. 76-112, [http://www.integral-review.org/current\\_issue/index.asp](http://www.integral-review.org/current_issue/index.asp). Special Issue: International Symposium: Research Across Boundaries, Part I, ed., M. Molz and M. Edwards.
- 2013 d Does Philosophy Betray Both Reason and Humanity?, changed without the author's knowledge to "Knowledge or Wisdom?", *The Philosophers' Magazine*, issue 62, 3rd quarter 2013, pp. 17-18.
- 2013 e How to Create a Better World: Bring about a Revolution in Universities, *Compass*, 29 October, <http://www.compassonline.org.uk/how-to-create-a-better-world-bring->

[about-a-revolution-in-universities/](#)

- 2013 f [The Urgent Need for an Academic Revolution: From Knowledge to Wisdom.](#) [Lecture]. Presented at: TEDx UCL, University College London (UCL) .
- 2014 a Revolutionary thought, *Times Higher Education* 23 January, no. 2,136, p. 30.  
A revolutionary mission statement: improve the world  
<http://www.timeshighereducation.co.uk/comment/opinion/a-revolutionary-mission-statement-improve-the-world/2010674.article>
- 2014 b Three Criticisms of Newton's Inductive Argument in the *Principia*, *Advances in Historical Studies*, 2014, vol. 3, no. 1, pp. 2-11. <http://www.scirp.org/journal/ahs>
- 2014 c How can our human world exist and best flourish embedded in the physical universe? An outline of a problem-based liberal-studies course, *On the Horizon*, vol. 22, issue 1, Emerald Group Publishing Ltd., special issue: Liberal Education in Crisis? Functions, Forms, and Foils. Guest Editor: Robert Bates Graber.  
<http://www.emeraldinsight.com/journals.htm?articleid=17106767&ini=aob>  
<http://www.emeraldinsight.com/journals.htm?issn=1074-8121&show=latest>
- 2014 d Do We Need an Academic Revolution? Account of UCL Launch of *How Universities Can Help Create a Wiser World*.  
[http://www.ucl.ac.uk/human-wellbeing/results/events/maxwell\\_report](http://www.ucl.ac.uk/human-wellbeing/results/events/maxwell_report)
- 2014 e Unification and Revolution: A Paradigm for Paradigms, *Journal for General Philosophy of Science*, vol. 45, issue 1, pp. 133-149.  
Doi:10.1007/s10838-013-9225-5
- 2014 f Philosophy Seminars for Five Year Olds, *Oxford Magazine*, no. 352, pp. 5-8 (republishing of *Learning for Democracy*, Vol. 1, No. 2, 2005, pp. 71-77).
- 2014 g Liberal education in crisis? Rejoinder by Maxwell, *On the Horizon*, Volume 22, Issue 1  
<http://www.emeraldinsight.com/doi/full/10.1108/OTH-11-2013-0057>
- 2015 a What Philosophy Ought to Do. Extract from ch. 2 of *Global Philosophy*, iai news (The Institute of Art and Ideas)  
<http://iainews.iai.tv/articles/what-philosophy-ought-to-do-auid-483>
- 2015 b To know the difference. Letter to *Times Higher Education*, 22-28 January.
- 2015 c How Humanity Might Avoid Devastation, *Ethical Record*, vol. 120, no. 1, January, pp. 18-23.  
<http://conwayhall.org.uk/ethicalrecord/thinking-on-sunday-how-humanity-might-avoid-devastation/>
- 2015 d Can the World Learn Wisdom?, *Philosophy Now*, June/July, pp. 32-5.  
[https://philosophynow.org/issues/108/Can\\_The\\_World\\_Learn\\_Wisdom](https://philosophynow.org/issues/108/Can_The_World_Learn_Wisdom)  
<http://discovery.ucl.ac.uk/1469734/>

- 2015 e What's Wrong With Aim-Oriented Empiricism?, *Acta Baltica Historiae et Philosophiae Scientiarum*, vol. 3, no. 2, pp. 5-31.  
[Nicholas Maxwell. What's Wrong with Aim-Oriented Empiricism?](http://discovery.ucl.ac.uk/1473371/)  
<http://discovery.ucl.ac.uk/1473371/>
- 2016 a Response to Review of "Two Great Problems of Learning" by Richard Vytiniorgu, *Metapsychology*, Oct 4th 2016 (Volume 20, Issue 40),  
[http://metapsychology.mentalhelp.net/poc/view\\_doc.php?type=book&id=7746&cn=394](http://metapsychology.mentalhelp.net/poc/view_doc.php?type=book&id=7746&cn=394)
- 2016 b The Crisis Confronting Humanity  
<http://roundedglobe.github.io/the-crisis-confronting-humanity/>
- 2016 c Do universities betray reason and humanity? The urgent need for an academic Revolution, Text of Scientists for Global Responsibility PowerPoint Talk.  
<http://www.sgr.org.uk/resources/do-universities-betray-reason-and-humanity>
- 2017 a *The Crisis of Our Times, and What to Do about It*, The April HPS&ST Note, pp. 5-8,  
<http://www.idtc-iuhps.com/hpsst-note.html>  
[http://www.idtc-iuhps.com/uploads/6/2/9/3/62931075/hps\\_st\\_note\\_2017\\_april\\_.pdf](http://www.idtc-iuhps.com/uploads/6/2/9/3/62931075/hps_st_note_2017_april_.pdf)
- 2017 b How to Tackle the Fundamental Crisis of Our Times, Paragon House Website,  
<http://www.paragonhouse.com/wp/ideas/how-to-tackle-the-fundamental-crisis-of-our-times/>
- 2017 c Can Universities Save Us From Disaster?, *On the Horizon*, vol. 25, issue: 2, pp. 115-130 <http://www.emeraldinsight.com/doi/full/10.1108/OTH-04-2016-0019>
- 2017 d What's Wrong with HPS and What Needs be Done to Put it Right?, HPS & ST Note, 22 June, pp. 10-22.  
[http://www.idtc-iuhps.com/uploads/6/2/9/3/62931075/hps\\_st\\_note\\_2017\\_june\\_.pdf](http://www.idtc-iuhps.com/uploads/6/2/9/3/62931075/hps_st_note_2017_june_.pdf)
- 2017e Review of J. D. Trout, *Wondrous Truths*, *Acta Baltica Historiae et Philosophiae Scientiarum*, vol. 5, no. 2 (Autumn 2017), pp. 108-115.
- 2017 f Afterwords Response to Nimrod Aloni's review of *Global Philosophy: What Philosophy Ought to Be*, *Educational Theory*, vol. 67, no. 2, 2017, pp. 225-226.
- 2018 a A new way of understanding the wave function Review of Shan Gao: *The meaning of the wave function*. Cambridge: Cambridge University Press, 2017, x+189 pp  
<http://dx.doi.org/10.1007/s11016-017-0245-3> .  
Published in *Metascience*, vol. 27, no. 1, March 2018, pp. 87-90.
- 2018 b We Need an Academic Revolution, 1<sup>st</sup> March, <http://emerald-real-world-impact.blogspot.co.uk/2018/03/we-need-academic-revolution.html> ,
- 2018 c Karl Popper, Science and Enlightenment: An Idea to Help Save the World, *Ethical Record*, vol. 123, no. 1, pp. 27-30.
- 2018 d We Need Progress in Ideas about how to achieve Progress, *Metascience*, vol. 27, issue 2, pp. 347-350. <https://doi.org/10.1007/s11016-018-0312-4> .

- 2018 e The Urgent Need for an Academic Revolution, [Scientistswarning.org](http://www.scientistswarning.org).  
<http://www.scientistswarning.org/the-urgent-need-for-an-academic-revolution/>
- 2018 f We Need to Recreate Natural Philosophy, *Philosophies*, 3(4), 28;  
 doi:10.3390/philosophies3040028 <https://www.mdpi.com/2409-9287/3/4/28/html>  
<https://www.mdpi.com/books/pdfview/book/1331> , pp. 20-34.
- 2019 a A New Task for Philosophy of Science, *Metaphilosophy*, vol. 50, no. 3, pp. 316-338.  
 DOI: 10.1111/meta.12355 <http://dx.doi.org/10.1111/meta.12355>
- 2019 b Aim-Oriented Empiricism and the Metaphysics of Science, *Philosophia*, pp. 1-18  
<https://link.springer.com/article/10.1007%2Fs11406-019-00064-w>
- 2019 c The Scandal of the Irrationality of Academia, *Philosophy and Theory in Higher Education*, special issue on “The Anthropocene and Higher Education”, 1(1), April 2019, pp. 105-128.
- 2019 d From Knowledge-Inquiry to Wisdom-Inquiry: A New Paradigm for Academia, *Paradigm Explorer*, No. 129, April 2019/1, pp. 3-7
- 2019 e Natural philosophy redux, Aeon, 13 May 2019,  
 [We Need to Put Science and Philosophy Together Again to Recreate Natural Philosophy]  
<https://aeon.co/essays/bring-back-science-and-philosophy-as-natural-philosophy>
- 2019 f The Metaphysics of Science and Aim-Oriented Empiricism, HPS & ST Note, May 2019, pp. 13-17.  
<https://www.hpsst.com/uploads/6/2/9/3/62931075/2019may.pdf>

## **Forthcoming**

**155 published papers 26 February 2017 12 Books**

## **Forthcoming**

## **Secondary Literature**

- 2009 Leemon McHenry, ed., 2009, *Science and the Pursuit of Wisdom: Studies in the Philosophy of Nicholas Maxwell*, Ontos Verlag, Frankfurt.
- 2010 An Exchange about Nicholas Maxwell’s *Science and the Pursuit of Wisdom*, *Philosophia* vol 38, no. 4, 2010.  
 Vicente, A., An Enlightened Revolt: On the Philosophy of Nicholas Maxwell, pp. 631-648.  
 Pandit, G. L., How Simple is it for Science to Acquire Wisdom According to its Choicest Aims?, pp. 649-666.  
 Maxwell, N., Reply to Comments on *Science and the Pursuit of Wisdom*, pp. 667-690
- 2005 g The Enlightenment, Popper and Einstein, *Ethical Record*



*Not yet Accepted for Publication*

Does Science make Metaphysical Assumptions

The Problem of Unity in Theoretical Physics

Comprehensibility rather than Beauty

From Knowledge to Wisdom: the Need for an Academic Revolution

Can Academic Inquiry Help Humanity Create a Civilized World? The Need for an Academic Revolution

Popper, Kuhn, Lakatos and Aim-Oriented Empiricism

Phil-Sci Archive PITT-PHIL-SCI00000251

29 April 2001.

Simplicity

Phil-Sci Archive PITT-PHIL-SCI00000252

29 APRIL 2001

## **Videos**

2008

The Urgent need for an Academic Revolution: From Knowledge to Wisdom. Sussex University, 25 November.

<http://www.sussex.ac.uk/cogs/seminars/videos/maxwell-academic-revolution>

2009

Is Science Neurotic? A Discussion with Nick Maxwell 18 July

<https://www.youtube.com/watch?v=b-dlpGLRJVU>

University of Calgary Accounting Theory and the Ideas of Nicholas Maxwell

<https://www.youtube.com/watch?v=xoC-JIgEi8s>

2012

Spotlight on Nicholas Maxwell, University of Toronto, 27 February. Conference: Mind Matters 2: The Psychology of Wisdom. BuddhismPsychology.

<https://www.youtube.com/watch?v=zy0BQtyAFsE>

The Theory of Everything. Panel discussion with John Ellis and Frank Close, Quentin Cooper chairing, at HowTheLightGetsIn, philosophy and music festival at Hay-on-Wye, 2 June.

<http://iai.tv/video/the-theory-of-everything>

<http://iai.tv/person/nicholas-maxwell>

The Uniqueness of Humanity. Panel discussion with Eva Aldea, Ken Binmore and Nicholas Humphries, chaired by David Malone, at the HowTheLightGetsIn, at Hay-on-Wye, 2 June.

<http://iai.tv/video/the-uniqueness-of-humanity>

2013

The Urgent Need to Bring About a Revolution in Academia, TEDxUCL, 5 September.

<https://www.youtube.com/watch?v=dak-tDMSBUY>

<http://socksonanoctopus.com/blog/2013/09/ted-talks-urgent-need-bring-revolution-academia-nicholas-maxwell/#.U5GvVyiGdqI>

## **Broadcasts**

2000

1. 31 Jan.: 'Start the Week', chaired by Jeremy Paxman, BBC Radio 4, discussion of "Can Humanity Learn to Become Civilized?", *Journal of Applied Philosophy* 17, 2000, pp. 29-44.

2. 11 Oct.: 'The Commission', chaired by Nick Ross on BBC 4; a contribution to "Anti-Science Culture".

2006

1. 21 Feb: Wisdom: We Need a Revolution. Talk with Jason Merchev and Cop Macdonald, Values and Ethics: From Living Room to Boardroom, World Talk Radio:

<http://www.worldtalkradio.com/archive.asp?aid=6088>

2. 15 Aug.: The Ideas, Words, and Influence of Albert Einstein. Talk with Jason Merchev, Values and Ethics: From Living Room to Boardroom, World Talk Radio:

<http://www.worldtalkradio.com/archive.asp?aid=7672>

2008

3. 18th June: How to Think About Science, episode 24; interview with David Cayley. Canadian Broadcasting Corporation. <http://www.cbc.ca/ideas/features/science/#episode24>.

<http://www.cbc.ca/ideas/episodes/2009/01/02/how-to-think-about-science-part-1---24-listen/#episode24>

<https://www.cbc.ca/radio/ideas/how-to-think-about-science-part-24-1.465012>

4. 11 March 2008. Interview on Weekly Signals about *From Knowledge to Wisdom*.

<http://www.weeklysignals.com/weeklysignalsarc-2008.html#nicholasmaxwell>.

5. 26 June: Repeat of the How to Think about Science interview on CBC with David Cayley, first broadcast on 18 June 2008.

## **Other Published Work**

1974 Thin end of the Draconian wedge?, Letter, *The Guardian*, 17 December, p. 12.

1977 a A valid approach to research, *The Guardian*, 12 September.

1977 b Science and a question of values, 23 September 1977.

1977 c Science and Values, *The Times Higher Educational Supplement*, 4 November, 1977, p. 27.

- 1979 How Science Lost Its Humanity, *The Guardian*, 27 September, 1979, p. 19.
- 1983 Popular Fallacies Concerning Popper's Philosophy, *The Times Higher Educational Supplement*, No. 567, 16 September, 1983, p. 27.
- 1984 a The Social Wisdom Philosophers should Pursue, *The Guardian*, 28 January, p. 12.
- 1984 b Science and Values, *The Times Literary Supplement*, 4, 262, 7 December, 1984, p. 1415.
- 1996 The BSE Scandal, Letter to the Guardian, *The Guardian*, 23 March, p. 26.
- 2001 a Letter, Political Philosophy, *The Guardian*, 7 April.
- 2001 b Darwin as Exemplary Philosopher, *The Guardian*, 8 September, p. 19
- 2002 Uncertain truth: critique of Umberto Eco on Popper, *The Guardian Review*, 2 November, p. 23.
- 2003 civics lesson, *The Guardian*, 25 March, p. 23.
- 2005 a Open and honest about science, *The Guardian*, 21 February.
- b Neurotic Science. *Philosophy Now*, Issue 53, November/December, pp. 41-42.
- 2007 a Peter Singer and George Bush: Letter to *The Guardian*, 1 September.
- b Questions remaining over De Menezes Who was responsible for the shoot-to-kill policy? Letter to *The Guardian*, 3 November.
- 2008 Elizabeth Pisani, Policy based on science without morality, Letter to *The Guardian*, 17 March.
- 2009 a Judging Obama on ... air strikes. Letter to *The Guardian*, 26<sup>th</sup> January.
- b Sacred principle of science's independence. Letter to *The Guardian*, 13<sup>th</sup> May.
- 2009 c Letter to The Guardian published on 22 August about the need to reform universities so that they become devoted to helping humanity make progress towards as good a world as possible.
- 2011 a Letter to *The Guardian* about the need for a revolution in our universities to help us create a better world. (Papers Accepted or Published/z the guardian) 8 January 2011. [Labour needs policies, not posturing](#)
- 2011 b Letter to *The Guardian* about damaging consequences of severity of cuts in public expenditure, 25 March.
- 2011 c Letter to The Guardian published on the 6<sup>th</sup> June about how to resolve clashes of local politics by means of a hierarchical conception of rationality.

2011 d Wisdom and Philosophy. Letter to *Oxford Magazine*, No. 311, Trinity Term, p. 14.

2013 Learning How to Make Progress Towards as Good a World as Possible: Wisdom Page Updates Editorial, February 2013 (see “Wisdom Page”).

### **Publications of the Web**

2000 a Is Miller Skeptical Enough?, Karl Jaspers Forum, ed. H. Muller, mdmu@musica.mcgill.ca, posted 22 February.

2000 b Can Humanity Learn to Become Civilized? (Electronic reprint of *J. Applied Philosophy*, 2000), Target Article 28, Karl Jaspers Forum, 1 August 2000.

2000 c On Rival Theories: Reply to Lewis Wolpert, Karl Jaspers Forum, 29 August 2000.

2000 d Reply to van der Meijden, KJF, 04/08/00 (30/08/00): R3.

2000 e Reply to Muller 04/09/00 (05/09/00) R3.

2000 f Reply to Swift 10/10/00 (05/09/00) R4.

2001 a Reply to Miller 21 January 2001 R9.

2007 Can the World Learn Wisdom? Solidarity, Sustainability, and Non-Violence, Vol. 3, No. 4. <http://www.pelicanweb.org/solisustv03n04maxwell.html>

### **PhilSci-Archive**

1. Simplicity 29 April 2001.

<http://philsci-archive.pitt.edu/archive/00000252/>

2. Popper, Kuhn, Lakatos and Aim-Oriented Empiricism 29 April 2001.

<http://philsci-archive.pitt.edu/archive/00000251/>

3. Scientific Metaphysics 21 March 2004

<http://philsci-archive.pitt.edu/archive/00001674/>

4. Karl Raimund Popper 12 April 2004.

<http://philsci-archive.pitt.edu/archive/00001686/>

5. Does Probabilism Solve the Great Quantum Mystery? 12 April 2004.

<http://philsci-archive.pitt.edu/archive/00001704/>

6. Can Humanity Learn to become Civilized? 13 April 2004.

<http://philsci-archive.pitt.edu/archive/00001709/>

7. Special Relativity, Time, Probabilism, and Ultimate Reality 10 May 2004.

<http://philsci-archive.pitt.edu/archive/00001748/>

8. Non-Empirical Requirements Scientific Theories Must Satisfy: Simplicity, Unification, Explanation, Beauty 22 May 2004.  
<http://philsci-archive.pitt.edu/archive/00001759/>
9. Comprehensibility rather than Beauty 28 May 2004  
<http://philsci-archive.pitt.edu/archive/00001770/>
10. In Defense of Seeking Wisdom 3 August 2004  
<http://philsci-archive.pitt.edu/archive/00001866/>
11. An Intellectual Revolution for Science and the Humanities: From Knowledge to Wisdom 10 August 2004  
<http://philsci-archive.pitt.edu/archive/00001874/>
12. The Need for a Revolution in the Philosophy of Science, 20 September 2004.  
<http://philsci-archive.pitt.edu/archive/00002449/>
13. The Enlightenment, Popper and Einstein, 1 March 2005.  
<http://philsci-archive.pitt.edu/archive/00002215/>
14. A Mug's Game? Solving the Problem of Induction with Metaphysical Presuppositions, 12 March 2005.  
<http://philsci-archive.pitt.edu/archive/00002230/>
15. Three Philosophical Problems about Consciousness and Their Possible Resolution 21 March 2005.  
<http://philsci-archive.pitt.edu/archive/00002238/>
16. Popper's Paradoxical Pursuit of Natural Philosophy, 28 March 2005  
<http://philsci-archive.pitt.edu/archive/00002246/>
17. Practical Certainty and Cosmological Conjectures, 14 April 2005  
<http://philsci-archive.pitt.edu/archive/00002259/>
18. Is Science Neurotic? 2 August 2002  
<http://philsci-archive.pitt.edu/archive/00002386/>
19. A Priori Conjectural Knowledge in Physics: The Comprehensibility of the Universe 1<sup>st</sup> September 2006 <http://philsci-archive.pitt.edu/archive/00002895/>
20. Aim-Oriented Empiricism: David Miller's Critique 9 December 2006  
<http://philsci-archive.pitt.edu/archive/00003092/>
21. The Problem of Induction and Metaphysical Assumptions Concerning the Comprehensibility and Knowability of the Universe  
<http://philsci-archive.pitt.edu/archive/00003141/>
22. Is the Quantum World Composed of Propensitons? 16 December 2007  
<http://philsci-archive.pitt.edu/archive/00003733/>

23. Do We Need a Scientific Revolution? 26 August 2008  
<http://philsci-archive.pitt.edu/archive/00004175/>
24. A Revolution for Science and the Humanities: From Knowledge to Wisdom 7 Oct 2010  
<http://philsci-archive.pitt.edu/1874/>
25. Unification and Revolution: A Paradigm for Paradigms 11 April 2012  
<http://philsci-archive.pitt.edu/9088/>
26. Has Science Established that the Cosmos is Physically Comprehensible? 4 Oct 2012  
<http://philsci-archive.pitt.edu/9349/>
27. Three Criticisms of Newton's Inductive Argument in the Principia 24 Aug 2013  
<http://philsci-archive.pitt.edu/9946/>

*Papers Completed but not yet Released for Publication*

1. Does Physics Assume that the Universe is Comprehensible? *Dept. History and Philosophy of Science, UCL. Research Paper N1, pp. 1-43.*
2. The Rationality of Scientific Discovery. *Dept. History and Philosophy of Science, UCL. Research Paper N2, pp. 1-46.*
3. Is it Meaningful to Assert that the Universe is Comprehensible? *Dept. History and Philosophy of Science, UCL. Research Paper N3, pp. 1-61.*
4. Does Old Quantum Theory contain the Key to Developing New Quantum Theory as a Precise Probabilistic Theory which makes no Reference to Measurement?
5. What's Wrong With Orthodox Quantum Theory?
6. Can the Precise conditions for Wave-Packet-Collapse to Occur be Investigated Experimentally?
7. Rampant Specialism: the Need for an Intellectual Revolution.
8. Fitting Together Science, Religion and Psychoanalysis.
9. Nature and Civilization: Two Great Problems of Learning.
10. The Comprehensibility of the Universe and the Solution to the Problem of Induction.
11. Simplicity
12. The Need for a Revolution in the Philosophy of Science.

13. Popper, Kuhn, Lakatos and Aim-Oriented Empiricism.
14. Comprehensibility rather than Beauty
15. From Knowledge to Wisdom: the Need for an Academic Revolution.
16. Can Academic Inquiry Help Humanity Create a Civilized World?

*Projected Books on which Work has begun, not yet Accepted for Publication*

1. *How Can We Build a Better World?* This book seeks to apply the central argument of *From Knowledge to Wisdom* to global problems - environmental, political, economic, social.
2. *Implications of Wisdom.* This book spells out the implications of the central argument of *From Knowledge to Wisdom* for various branches and aspects of academic inquiry and education.
3. *The Odd Couple: An Inquiry into the Crisis in History and Philosophy of Science and Its Role in Obstructing the Resolution of Global Problems.* Half written.
4. *Why is the Universe Comprehensible?.* This book discusses a number of problems concerning the comprehensibility of the universe that come to the fore once the aim-oriented empiricist conception of science is accepted, which I have argued for in a number of earlier works.
5. *A Personal World in the Physical Universe.* An intellectual autobiography, all but finished, concerned to show how philosophical thought, at least for this philosopher, arises from an interplay of the passionately personal and the severely impersonal.

### **Invited Lectures**

**Lectures 1966-86:** During this twenty year period I have given lectures by invitation to a wide range of Universities, Institutions and Societies: for example, the Universities of Sussex, Essex, Bristol, London, Edinburgh, Nottingham, Liverpool and Birmingham; to the Institute of Education, the London School of Economics, and Chelsea College in London; to the Annual Conference of the British Society for the Philosophy of Science, and to the Annual Conference of the Science, Technology and Society Association, in the UK; and at Pittsburgh University (1972), and to the Annual Conference of the American Association for the Advancement of Science (1984) in the USA. And at UCL I have given lectures to various Departments; and I have given three lunch hour lectures.

### **1987-88**

1. Lecture to the Institute of Adult Education at Cambridge.
2. Lecture given at the Institute of Education, London.
3. Refereed poster on interpretative problems of quantum theory, presented at the

Schrodinger Conference at Imperial College, London, 31st March to 3rd April, and published in the *Conference Programme*.

4. Lecture to *The Science and Religion Forum Conference*, 9-11 April, Winchester, entitled "Fitting together Science, Religion and Psychoanalysis".
5. Two lectures given to *Ethics and Sociology of Science Conference* held in Dubrovnik, 13-24 April.
6. Lecture entitled "What's Wrong With Science?" given to the Philosophy Department of North Carolina University at Greensboro, on the 14th October.
7. Lecture entitled "How can Universities Help Us Build a Better World?" given to the Liberal Arts Faculty of the Greensboro Campus of North Carolina University on the 15th October.
8. Seminar given in the Department of History and Philosophy of Science at Pittsburgh University, devoted to themes from my book *From Knowledge to Wisdom*.
9. Lecture given at the Center for Philosophy of Science, Pittsburgh University, on 6th January, 1988, on themes from my book *From Knowledge to Wisdom*.
10. Lecture given at the Boston Colloquium on 2nd February 1988 entitled: "How Can We Build a Better World?"
11. Two lectures given to the Philosophy Department of the University of Western Ontario, London, Ontario, Canada - one on the philosophy of quantum theory, the other on the philosophy of wisdom: 9th March 1988.
12. Two lectures given at Davidson College, North Carolina, on 16th and 17th March, on quantum theory, and on the philosophy of wisdom.
13. Lecture given at Indiana University, Bloomington, entitled "How Can We Build a Better World?", sponsored by the Philosophy Department, on the 24th March.
14. Seminar given on the philosophy of quantum theory in the Department of History and Philosophy of Science at Indiana University, Bloomington, on the 25th March.
15. Lecture given to the Philosophy Department of Cincinnati University on the philosophy of wisdom, on 1st April.
16. Seminar given in the Philosophy Department of Pittsburgh University, entitled "Life of Value in the Physical Universe?", on 7th April.
17. Lecture given to the Philosophy Department of the University of Connecticut, October, 1988.
18. Three lectures given at the Illinois Institute of Technology, Chicago, October 1988.

**1989**



1. Lecture given at Newcastle University on "From Knowledge to Wisdom" on 4th May.
2. Participant, by invitation, in Conference on the History and Philosophy of Quantum Theory, Erice, Sicily; 5-14 August.

### **1990**

1. Lecture given by invitation to Conference on "The Unity of the Sciences" held in Bonn, organized by the Akademie der Wissenschaften zu Berlin, on 27th June, and subsequently published in the proceedings of the Conference.

### **1991**

1. Lecture given, by invitation, to the Bloomsbury Particle Group (graduate seminar of Birkbeck College and UCL Physics Departments) entitled "Does Physics Assume that the Universe is Comprehensible?", 6th February.
2. Talk given to Birkbeck College Physics Department's graduate seminar on "What's Wrong with Quantum Theory, and What to do about It"; 20th and 27th February.
3. Paper given at Conference on Specialization organized by the Higher Education Foundation, 23rd March, entitled "What the Task of Creating Civilization has to Learn from the Success of Modern Science: Towards a New Enlightenment".
4. Paper given to the Department of History and Philosophy of Science, University of Cambridge, on "Does Physics assume that the Universe is Comprehensible?", on 30th April.
5. Paper, entitled "Beyond Fapp: How can Quantum Theory be Improved?", given to Conference on "Bell's Theorem and the Foundations of Modern Physics: International Conference in Memory of John Bell", held in Cesena, Italy on 7th to 10th October, to be published in the Proceedings of the Conference (see above).
6. Talk given to Departmental Graduate Seminar at University College London entitled "Does quantum theory support or undermine scientific realism?".

### **1992**

1. Talk given to Physics Department of University of Surrey on "Three Approaches to Improving Quantum Theory and an Experimental Test" on 19 February.

### **1993**

1. Lecture given to the Staff/Graduate Seminar of the Department of Philosophy, Logic and Scientific Method of the London School of Economics on the 12th January entitled "How can we build a better world? From knowledge to wisdom".
2. Lecture given to the Bloomsbury Particle Physics Seminars (University College and Birkbeck College) on 24 February, entitled "The

Comprehensibility of the Universe and the Solution to the Problem of Induction".

3. Talk given to the South Place Ethical Society on 14th March entitled "Science for Society".
4. Lecture given to the Centre for Higher Education Studies at the Institute of Education on 12 May, entitled "Inquiry designed to Promote Wisdom".
5. Lecture given to One-Day Conference on Philosophy of Physics, held by the Sigma Club at the Department of History and Philosophy of Science of Cambridge University, on 12 June, entitled "Particle Creation and Wave-Packet Reduction".
6. Lecture given at International Symposium on Fundamental Problems in Quantum Physics at Oviedo, Spain, on 1st September, entitled "A Philosopher struggles to understand quantum theory: Particle creation and wave packet collapse".
7. Paper, entitled "Inelastic transitions and collapse", given at the Fourteenth Institute for Theoretical High Energy Physics at the University of St. Andrews, as a part of a Colloquium on Time, Quantum Theory and Cosmology, on the 6th September.
8. Lecture, entitled "Rigorous Inquiry", given at Sharpham Colloquium on Wisdom and Higher Education, on the 26th September, at Sharpham House, Totnes, Devon.
9. Lecture entitled "Can Humanity learn how to become civilized?" given at the University of the West of England (Bristol) on 1st December.

## 1994

1. Lecture on "What kind of inquiry can best help us create a good world?" at a Plenary Session, devoted to my work, of Conference of the American Association for Higher Education at New Orleans, 29th January, 1994. Copies of my paper of the same title, first given at the Boston Colloquium in 1988, and subsequently published in *Science, Technology and Human Values* in 1992, were circulated to all the delegates attending the conference. Respondents: Donald Schon, MIT, and Lee Shulman, Stanford University. Both endorsed the main argument of my paper. Schon, a past Reith lecturer, began his comments with the words: "This paper by Nicholas Maxwell restores my faith in British Education. The paper deals with profound issues with clarity and precision." The paper was referred to favourably, and quoted, in other sessions of the conference.
2. Lecture entitled "The Problematic Value of Science" at Wittenberg University, Springfield, Ohio, 31st January 1994.
3. General Public Lecture, entitled "From Knowledge to Wisdom", Wittenberg University, 1st February 1994.
4. Lecture to the Physics Department and other Faculty and graduate students on "The Great Quantum Riddle", 2nd February 1994.
5. Lecture on "From Knowledge to Wisdom" at the University of Massachusetts at Amherst, 4th February 1994.

6. Lecture on "Probabilistic Wavepacket Collapse" at the Department of Mathematical Sciences, Durham University, 9th February 1994.

7. Lecture on "The Problematic Value of Science" given to the Psychology Department, Liverpool Institute of Higher Education, on 16th February.

8. Lecture given to the British Society for the Philosophy of Science on 7 March, entitled "Is Probabilism the Key to the Great Quantum Riddle?"

9. Lecture entitled "Does Old Quantum Theory contain the Key to the Measurement Problem of New Quantum Theory?", given on 15th September at the Third UK Conference on Foundations of Quantum Theory and Relativity: Cambridge, September 1994.

## 1995

1. Lecture entitled "The Evolution of Consciousness", given on 19th February to the South Place Ethical Society, Conway Hall, London.

2. Lecture entitled "The Comprehensibility of the Universe", given 23 May to the Philosophy of Physics Seminar in the Department of Philosophy at the London School of Economics.

3. Lecture entitled "Another Attempt to Make Quantum Theory Comprehensible" given on 16th September at the Fourth UK Conference on Foundations of Quantum Theory and Relativity: Durham, September 1995.

## 1996

1. Lecture entitled "The Problematic Value of Science: From Knowledge to Wisdom", given to the Geological Department at UCL, 28 February 1996.

2. Lecture entitled "Are there Objective Values?", given on 17 March to the South Place Ethical Society, Conway Hall, London.

3. Lecture entitled "Is the Universe Comprehensible?", given at the 5th UK Conference on Conceptual and Philosophical Problems in Physics 13th September 1996, Oxford University.

4. Lectures entitled "Towards Fundamentally Probabilistic Quantum Theory", given at Professor Elliot Leader's Physics Seminar at Birkbeck College, on 13 November and 11 December 1996.

## 1997

1. Lecture entitled "Is Science Properly Suited to Resolve Contemporary Ecological Problems?", given at the Gulbenkin Theatre, Oxford, under the auspices of the Centre for the Environment, Ethics and Society, Mansfield College, on 23 January, 1997 at 5.0 pm. (Originally intended to be a debate with Max Perutz; this had to be cancelled because Perutz was not well.)

2. Seminar entitled "Has Science Established that the Universe is Comprehensible?" given at Professor Elliot Leader's Physics Seminar at Birkbeck College, on 5 February 1997 at 11.30 am.
3. Lecture entitled "Must Science make Cosmological Assumptions in order to be Rational?" given to the Irish Philosophical Society, Saturday, 22 February 1997.
4. Seminar entitled "Simplicity" given at the Philosophy of Physics Seminar at the London School of Economics, 6th May 1997.
5. Seminar on unity in physics given at Professor Elliot Leader's Seminar at Birkbeck College, 11 June '97.

## 1998

1. Lecture entitled "The Comprehensibility of the Universe" given on 1st February to the South Place Ethical Society, Conway Hall, London.
2. Lecture entitled "Is the Universe Comprehensible?", given on 7th September at Conference on "Understanding Scientific Progress" at the Department of Continuing Education, Rewley House, University of Oxford.
3. Lecture entitled "Simplicity", also given on 7th September at the above Conference.
4. Philosophy of Science in the 20th Century: Six Lectures given to the South Place Ethical Society, Conway Hall, London
  - i 19 March: Pierre Duhem: Saving the Phenomena.
  - ii 26 March: Karl Popper: Conjectures and Refutations.
  - iii 2 April: Albert Einstein: God is not Malicious.
  - iv 23 April: Thomas Kuhn: Scientific Revolutions.
  - v 30 April: Imre Lakatos: Scientific Research Programmes.
  - vi 7 May: Nicholas Maxwell: The Comprehensibility of the Universe.
5. 27 March: Seminar at Birkbeck College entitled "Quantum Probabilistic Reality".
6. 10 Sept.: Simplicity and the Comprehensibility of the Universe, lecture at the 7th UK Conference on Mathematical and Conceptual Foundations of Modern Physics, Nottingham University, UK.
7. 21 Oct.: What kind of Inquiry can best help us create a better world?, seminar given at the Interdisciplinary Human Studies Department of Bradford University.
8. 30 Oct.: Has Science Established that the Universe is Comprehensible? Philosophy of

Physics Seminar, Sub-Faculty of Philosophy, Oxford University.

9. 17 Nov.: Reinterpreting the Enlightenment. Seminar given to the Philosophy Department at the University of Lancaster.

10. 2 Dec.: Can Humanity Learn how to Become Civilized? Open Lecture at Joint Seminar of Departments of Philosophy, Politics and International Relations at Keele University.

## **1999**

1. 12 Jan.: Simplicity. Philosophy of Science Seminar in the Philosophy Department of Warwick University.

2. 19 Jan.: What kind of Inquiry can best help us create a Good World?. Talk to Philosophy Society, Department of Philosophy, Kings College London.

3. 25 Jan.: The Enlightenment Reinterpreted. Lecture given to the Welsh branch of the Royal Institute of Philosophy at Cardiff University.

4. 2 March: Simplicity. Talk at the Center for Philosophy of Science, University of Pittsburgh.

5. 19 March: Political Motivations behind Plato's theory of the Forms. Talk at Loyola Marymount University, California.

6. 19 March: Has Science Established that the Universe is Comprehensible?. Colloquium in the Philosophy Department at Loyola Marymount University, California.

7. 24 March: Quantum Theory and Probabilism. Talk given to the Physics Department at Loyola Marymount University.

8. 25 March: Cutting God in Half. Talk given at Loyola Marymount University.

9. 25 March: Science and Wisdom: the 21st Century. Public lecture given at Loyola Marymount University, California.

10. 8 April: From Comprehensibility to Wisdom: Treading in the Footsteps of Popper. Talk given to the Philosophy Department of Penn State University, State College, Pennsylvania.

11. 16 April: Is the Universe Comprehensible?. Talk jointly sponsored by the Philosophy Department, Dalhousie University and The Contemporary Studies Programme, University of King's College, Halifax, Nova Scotia.

12. 10 June: The Problem of Induction and the Comprehensibility of the Universe. Seminar given as a part of Colin Howson's graduate course on the problem of induction at the London School of Economics.

13. 13 September Cosmic Physicalism. Lecture given to the UK Conference on Foundations of Physics.

14. 22 October Simplicity. Seminar given in the Department of Foundations of Physics at Utrecht University.

## 2000

1. 31 Jan.: 'Start the Week', chaired by Jeremy Paxman, BBC Radio 4, discussion of "Can Humanity Learn to Become Civilized?", *Journal of Applied Philosophy* 17, 2000, pp. 29-44.

2. 23 June: The Crisis of Science without Civilization. Talk given at *Environmental Values*, Conference at University College Cork, Ireland, 23-25 June.

3. 11 Oct.: 'The Commission', chaired by Nick Ross on BBC 4; a contribution to "Anti-Science Culture".

4. 15 Dec.: What are the Elements of Good Research? Graduate Seminar given in the Higher Education Research and Development Unit, University College London.

5. 4 Oct - 13 Dec: The Human World in the Physical Universe: Part I. Course given under the auspices of the Department of Continuing Education, Oxford University, at Gerrards Cross.

## 2001

1. 13-4 Jan.: Consciousness and Nature, Weekend Conference at the Department of Continuing Education at the University of Oxford, with Galen Strawson as the other speaker. Two lectures on 13th Jan.: 'Brain, Consciousness and Free Will', and 'The Evolution of Consciousness'.

2. 10 Jan - 21 March: The Human World in the Physical Universe: Part II. Course given under the auspices of the Department of Continuing Education, Oxford University, at Gerrards Cross.

3. 10 April Comprehensibility rather than Beauty. Talk given at 27<sup>th</sup> Annual Philosophy of Science Conference Dubrovnik, 9-14 April 2001, "Aesthetics of Science".

3. 10 May. Has Science Discovered that the Universe is Physically Comprehensible? WEA Talk: Teddington.

4. 14 July. From Knowledge to Wisdom. Given at ISUD Conference, Krakow, Poland.

5. 17 July. The Need for an Academic Revolution. Talk given at the Institute of Philosophy, Warsaw University.

## 2002

1. 8 April. A possible solution to a part of the hard problem of consciousness. Given at the

"Toward a Science of Consciousness" Conference, Tucson, Arizona, USA, 8-12 April.  
Abstract published in the Conference Research Abstracts, p. 43-4.

2. 17 April. What Should We Teach and Learn? The Need for a Revolution in the Aims and Methods of Academic Inquiry. Given at "Teaching and Learning at UCL: The Way Forward", two-day Conference at UCL.

3. 28 April. Three Philosophical Problems about Consciousness. Talk given to the South Place Ethical Society, Conway Hall.

3. 4 July. The Enlightenment Programme and Karl Popper. Talk given to "Karl Popper 2002", Cenerary Congress, Vienna.

4. 13 Sept. The Problem of Theoretical Unity in the Philosophy of Physics. Talk given to "The 11th UK Conference on the Conceptual Foundations of Modern Physics", Oxford.

5. 10 Nov. Science, Knowledge, Wisdom and the Public Good. Talk given to Scientists for Global Responsibility, ULU Building, London.

## **2003**

1. 30 March Does Science Suffer from Rationalistic Neurosis? Talk given to the South Place Ethical Society, Conway Hall.

2. 2 April The Aims of Education and Academia: From Knowledge to Wisdom. Talk given to "Education and Professional Development Debates in Higher Education Seminar Series", University College London.

3. 11 May How are the Experiential and the Physical Related? Talk given to the South Place Ethical Society as introduction to a seminar on this topic.

4. 8 August Does Scientific Method Make Metaphysical Assumptions? Towards a New Conception of Science. Lecture given to 12<sup>th</sup> International Congress of Logic, Methodology and Philosophy of Science, Oviedo, Spain.

5. 10 August From Knowledge to Wisdom: The Need for a Revolution in the Aims and Methods of Science and the Humanities. Lecture given to 12<sup>th</sup> International Congress of Logic, Methodology and Philosophy of Science, Oviedo, Spain.

6. 12 August The Problem of Unity of Theory in Physics and Its Solution. Lecture given to 12<sup>th</sup> International Congress of Logic, Methodology and Philosophy of Science, Oviedo, Spain.

7. 27 November What Kind of Inquiry can Best Help us Create a

Better World? Popper, Science and Enlightenment. Philosophy of Science Research Seminar, University of Oxford.

8. 17 December Are Quantum Objects Propensitons? Talk given to “Dispositions and Propensities in Science”, Workshop at the Departamento de Lógica y Filosofía de la Ciencia, Universidad Complutense de Madrid, Madrid.

## **2004**

1. 14 May Special Relativity, Time, Probabilism, and Ultimate Reality. Talk given at “The Ontology of Spacetime”, Conference at Concordia University, Montreal, 11-14 May 2004.

## **2005**

1. 6 February Enlightenment, Popper and Einstein. Talk given to the South Place Ethical Society, Conway Hall, London.
2. 25 August The Search for Scientific Understanding: From Physics to Natural Philosophy. Talk given at Conference “Philosophical Perspectives on Scientific Understanding”, 25 to 27 August, Vrije Universiteit, Amsterdam.
3. 2 November Is Science Neurotic? Talk given at Kant’s Cave, under the auspices of *Philosophy Now*, The Sols Arms, 65 Hampstead Rd., London.
4. 15 November Is Science Neurotic? Talk given to the Birkbeck College Philosophy Society, Birkbeck College.

## **2006**

- 8 November From Knowledge to Wisdom: The Urgent Need for a Revolution in Academic Inquiry, talk given to the Philosophy Department of the London Institute of Education.

## **2007**

- 10 March The Problem of Induction and Metaphysical Assumptions Concerning the Comprehensibility and Knowability of the Universe, talk given to Conference, Confirmation, Induction and Science, at the London School of Economics.

## **2008**

- 13 April Cutting God in Half – And Putting the Pieces Together Again. Talk given to the South Place Ethical Society, Conway Hall.
- 21 June The Urgent Need for an Academic Revolution: From Knowledge to Wisdom. Talk given to “Philosophers for All” at the Mary Ward Centre, Queen’s Square, London.



- 10 September The Urgent Need for a Revolution in Our Universities. Talk given at “All Our Futures”, at the Centre for Sustainable Futures, Plymouth University, Plymouth.
- 21 November The Urgent Need for an Academic Revolution: From Knowledge to Wisdom. Provost Seminar, Bentley University, Boston, USA.
- 21 November Seminar with Bentley University PhD Students.
- 25 November The Urgent Need for an Academic Revolution: From Knowledge to Wisdom. Talk to the Cognitive Science Seminar at Sussex University.

## 2009

- 5 September The Urgent Need for a Radical Revolution in our Universities. Talk given at The Treehouse Gallery, Regent’s Park.

## 2010

- 20 May The Urgent Need for an Academic Revolution: From Knowledge to Wisdom, key note address given on 20 May 2010 at a Conference at Poznan University of Technology, Poland, and published in *International Interdisciplinary Technical Conference of Young Scientists: Proceedings*, ed. W. Karpiuk and Wisniewski, Poznan, 2010, pp. 19-30.
- 9 August The Urgent Need for an Academic Revolution: From Knowledge to Wisdom, talk given to Alternative Natural Philosophy Association (anpa) at Westcott House, Cambridge (Adam and Vivienne Westwood).
- 6 October Does Probabilism Solve the Great Quantum Mystery?, talk given in the Physics Department, Lisbon University, Portugal.
- 7 October Seminar given in Jose Croca’s office at Lisbon University.
- 9 October Quantum Theory, Einstein, and the Great Betrayal, talk given in the Physics Department of Lisbon University, Portugal.
- 15 December The Urgent Need for an Academic Revolution: From Knowledge to Wisdom, keynote lecture at the Annual Conference of the Society for Research into Higher Education, entitled “Where is the wisdom we have lost in knowledge?”, at Celtic Manor Resort, Newport, Wales.

## 2011

- 5 February The Urgent Need for a Revolution in Universities so that the Basic Aim Becomes Wisdom, For People and Planet – Conference on Transition Universities, Winchester University, Winchester. (Ten Minute Talk: part of a panel.)
- 20 May The Menace of Science without Civilization: From Knowledge to Wisdom,

keynote lecture given at “Functions and Aims of Science. Is Science in Poland Innovative?”, Conference at the Institute of Philosophy and Sociology of Polish Academy of Sciences, Warsaw, Poland.

13 October Do We Need a New Conception of Science? Talk given to the Science Group, Highgate Literary and Scientific Institution, Highgate.

28 October The Urgent Need for an Academic Revolution: From Knowledge to Wisdom, Keynote Lecture, International Conference, 28-29 October, *The Role and Values of The University in a New Era*, Taipei, Taiwan.

## 2012

19 February How Universities Can Help Create a Wiser World: The Need for an Academic Revolution. Keynote lecture at Conference at the University of Toronto entitled "Mind Matters 2: New Perspectives on the Psychology of Wisdom".

12 April Unity and Revolutions: A Paradigm for Paradigms, Kuhn Conference, Loughborough University.

28 April From Knowledge to Wisdom. Talk to TheGlint, San Fransisco, by videolink.

2 June The Theory of Everything. Panel discussion with John Ellis and Frank Close, Quentin Cooper chairing, at HowTheLightGetsIn, philosophy and music festival at Hay. <http://iai.tv/video/the-theory-of-everything>  
<http://iai.tv/person/nicholas-maxwell>

2 June The Paragon of Animals. Panel discussion about evolution and humanity with Nicholas Humphrey, Ken Binmore, and Eva Aldea, with David Malone chairing, at the Hay Festival.

3 June A Wiser World. Talk at the Hay Festival.

23 September The Menace of Science without Wisdom. South Place Ethical Society, Conway Hall, London.

## 2013

2 June The Urgent Need for an Academic Revolution: From Knowledge to Wisdom TEDxUCL Talk, University College London.  
[www.youtube.com/watch?v=dak-tDMSBUY](http://www.youtube.com/watch?v=dak-tDMSBUY)

13 December How Universities Can Help Create a Wiser World. IX Annual Estonian Philosophy Conference, Tallinn University of Technology, Estonia.

13 December How to Make Sense of Science. IX Annual Estonian Philosophy Conference, Tallinn University of Technology, Estonia.

## 2014

20 March How Universities Can Help Create a Wiser World: The Urgent Need for an

Academic Revolution: Book Launch at UCL under the auspices of Human Wellbeing, Grand Challenges. Responses by Philip Ball and Alan Sokal. See [http://www.ucl.ac.uk/human-wellbeing/results/events/maxwell\\_report](http://www.ucl.ac.uk/human-wellbeing/results/events/maxwell_report)

29 October We Need an Academic Revolution, Department of Education, Birmingham University.

17 November Devoted Actors - The Psychology of Fundamentalism, Responding to Lord John Alderdice, chaired by David Morgan, Freud Bar, Cafe Rouge, Highgate. (Open Society and Its Enemies, stupidity and criminality of democratic governments in combating terrorism, relevance of from knowledge to wisdom.)

14 December How Humanity Might Avoid Devastation, Conway Hall.  
<http://conwayhall.org.uk/ethicalrecord/thinking-on-sunday-how-humanity-might-avoid-devastation/>

## 2015

21 January Can the University Save Us from Disaster?, Philosophy of Education Seminar, Institute of Education

26 June Scientific Progress: Has History and Philosophy of Science Improved Our Understanding of How this Comes About?, International Summer School, [Maison Européenne des Sciences de l'Homme et de la Société](http://www.maison-europeenne.org/), Lille.

29 August In order to Create a Better, Wiser World we need a Revolution in Academic Inquiry, Videoed Talk for Berlin Conference on Second Order Science, 5 August, recorded at the Sofitel Hotel, Terminal 5, Heathrow.

3 November Wisdom-Mathematics, 31st Cultural Studies Dialogue: Knowledge, Expertise and Wisdom, National Defence Academy, Vienna.

4 November Keynote Speech: The Urgent Need to Transform Knowledge-Inquiry into Wisdom-Inquiry, 18th Civil-Military Relations Conference. After War: Building, Sustaining and Thinking Peace.

## 2016

19 November Do Universities Betray Reason and Humanity? The Urgent Need for an Academic Revolution, Scientists for Global Responsibility Annual Conference, Universities for Sale, The Gallery, Farringdon, London  
<http://www.sgr.org.uk/resources/do-universities-betray-reason-and-humanity>  
<https://www.youtube.com/watch?v=cWUD8e8GUIs&feature=youtu.be>  
<http://www.sgr.org.uk/sites/sgr.org.uk/files/SGRconf2016-Maxwell-Academic-revolution.pdf>

## 2017

21 March Talk at UCL Book Launch for *In Praise of Natural Philosophy* and *Understanding Scientific Progress*

17 May Understanding Scientific Progress: Remarks on the Solution to the Problem of Induction, STS Research Day, UCL

5 November Karl Popper, Science and Enlightenment: An Idea to Help Save the World.  
South Place Ethical Society, Conway Hall, 11 am to 1 pm.

Account sent to Neash: The sermon went well. Over 60 people present: the room was packed. They laughed at my spontaneous jokes, and showered me with individual thanks afterwards. I brought a whole lot of books with me - some by Popper, some by me, some by others - and held them up and praised them as I proceeded. I remembered I had done something like that before, and it had been rather successful. This time it worked too. I told stories - about Popper, for example - along the course of my talk, and so didn't really have time to spell out in detail how we were going to save the world, but it didn't seem to matter too much. The man who invited me to give the talk emailed me yesterday to say "Really enjoyed you talk yesterday Nicholas...you packed them in and virtually had them eating out of your hands! ...A great many thanks for a sparkling do!" So I think it must have gone quite well.

## 2018

6 February The Urgent Need for an Academic Revolution: From Knowledge to Wisdom.  
Reading University, 1-2 pm.. Via Chapliancy. Went well.

7 July Wisdom Economics. The School of Economic Science, Peter Bowman. Went well. Animated conversation in Italian Restaurant over lunch afterwards.

## 2019

14 January Are Universities Doing Enough to Help Save Us from Impending Disaster?,  
International Pre-Master's Students, UCL, Lankester Lecture Theatre, Medawar Building, 2-3 pm. Went OK. Nice, friendly students. Many thanked me afterwards. One asked "What can we students do?". Another asked me afterwards "Why are universities so resistant to change?". I tried to explain. I am told I will be paid £100 for doing the lecture. And the lecture was deemed to be so important that it was filmed throughout. The two members of staff present congratulated me afterwards. So perhaps I am not yet entirely passed it!

## ACCOUNT OF RESEARCH WORK OF NICHOLAS MAXWELL BY THE AUTHOR

**Motto (Karl Popper):** *"We are not students of some subject matter but students of problems. And problems may cut right across the borders of any subject matter or discipline ... Genuine philosophical problems are always rooted in urgent problems outside philosophy, and they die if these roots decay ... For me, both philosophy and science lose all their attraction when they become specialisms and cease to see, and to wonder at, the riddles of our world. Specialization may be a great temptation for the scientist. For the philosopher it is the mortal sin ... the philosophy of science is threatening to become a fashion, a specialism. Yet philosophers should not be specialists. For myself, I am interested in science and in philosophy only because I want to learn something about the riddle of the world in which we live, and the riddle of man's knowledge of that world. And I believe that only a revival of interest in these riddles can save the sciences and philosophy from narrow specialization and from an obscurantist faith in the expert's special skill and in his personal knowledge and authority; a faith that so well fits our 'post-rationalist' and 'post-critical' age, proudly dedicated to the destruction of the tradition of rational philosophy, and of rational thought itself."*

---

All my research work, and much of my teaching, during the past 30 years, have been concerned, in one way or another, with two fundamental, inter-related problems:

*Problem I:* How can human life exist - conscious, free, meaningful and of value - if the world really is more or less as modern physical science tells us it is?

*Problem II:* What ought to be the overall aims and methods of science, and of academic inquiry more generally, granted that the basic task is to help humanity achieve what is of value - a more civilized world - by cooperatively rational means (it being assumed that knowledge and understanding are of value in themselves and form a part of civilized life)?

Both problems have played a central role in the history of thought. The first problem begins with Democritus; aspects of the problem can be found in the writings of Galileo, Kepler, Boyle, Newton; it is central to the work of Descartes, Locke, Berkeley, Hume, Kant and, in more recent times, has been of concern to such diverse thinkers as Whitehead, Russell, Stebbing, Popper, Dennett, Nagel and Searle. The second problem (appropriately interpreted) occupies a central place in the thought of Socrates, Plato and Aristotle; it is basic to the work of Francis Bacon, Descartes, Locke; it has a fundamental role to play in Enlightenment thought of the 18th century; and that aspect of the problem that has to do with the pursuit of knowledge has continued to play a central role in philosophy and philosophy of science down to the present.

The first problem includes the mind/body problem, the problem of free will and determinism, and the problem of the relationship between facts and values; it includes problems concerning the relationship between perceptual and physical properties, and problems concerning the relationship between different branches of the sciences, from physics via biology to psychology. It involves problems concerning the interpretation of the neurosciences, Darwinian theory, and modern physical theory, especially quantum theory; and it involves questions concerning scientific realism, scientific essentialism and instrumentalism. Work that I have done on this problem includes: my MA thesis, my first three papers (published in 1966 and 1968), a series of papers on quantum theory, parts of *What's Wrong With Science?*, "Methodological Problems of Neuroscience", chapter 10 of *From Knowledge to Wisdom*, and part 2 of "Induction and Scientific Realism". Especially significant are: "Physics and Common Sense" (1966), chapter 10 of *From Knowledge to Wisdom*, and "The Mind-Body Problem and Explanatory Dualism" (2000). My intention is to bring together the various strands of this long-standing research with the publication of a book I have been working on for some time now entitled *The Human World in the Physical Universe*.

My work on the second problem has arisen out of my concern with the central problem of the philosophy of science, namely the problem of induction, the problem of the rationality of science. In 1972 I published a paper entitled "A Critique of Popper's Views on Scientific Method", in which I argue that Popper fails to solve the problem of induction because his methodology fails to exclude theories that score highly in terms of empirical content and empirical success but are grossly *ad hoc* and non-explanatory. This led to a long two-part paper, published in *Philosophy of Science* in 1974, entitled "The Rationality of Scientific Discovery", in which I argue that the persistent exclusion from science of empirically successful but grossly *ad hoc* theories means that science makes a substantial, persistent, implicit metaphysical assumption, to the effect that the universe has some kind of unified structure. At any given stage in its development, science must assume that the universe is

comprehensible in some way or other, and yet the particular version of this assumption that is made, at any given stage, is almost bound to be *wrong* (as the historical record so vividly illustrates). The basic *aim* of science, of discovering in what precise way the universe is comprehensible, is problematic; as science proceeds it needs to revise its ideas about the way in which the universe is comprehensible. And as the *aim* of science is revised in this way, so too are the *methods* of science. (The transition from Aristotelian metaphysics to Galilean metaphysics, or the transition from the corpuscularianism to Boscovichean point-atomism, leads to an associated change of *methods*.) In order to proceed rigorously, so as to maximize the chance of scientific progress, science needs to make *explicit* implicit, influential and *problematic* assumptions about how the universe is comprehensible, so that alternative assumptions can be considered, and so that aims and associated methods may be *improved*. On this view, then, there is a persistent interplay between improving *knowledge* and improving *aims and methods*; only at the *metamethodological* is there persistence and unity of method. Put another way, as scientific knowledge improves, knowledge-about-how-to-improve-knowledge improves as well, a vital feature of scientific rationality which helps to explain the explosive growth of scientific knowledge. (Ideas in some respects similar to this have been subsequently expressed by Larry Laudan, with the big difference that Laudan is an anti-realist.) It is just this "aim-oriented empiricist" conception of science that we find Einstein putting into scientific practice in developing special and general relativity, and even *advocating* in an increasingly explicit way in his later years (a point developed in some detail in part 3 of "Induction and Scientific Realism", published in the *BJPS* in 1993).

Aim-oriented empiricism, I claim, solves the central problem of the discipline, namely the problem of induction. The view has fruitful implications, not only for the philosophy of science and for science education, but for science itself: it provides a rational, if non-mechanical and fallible, method of discovery in science (which Einstein made essential use of in developing special and general relativity). Once aim-oriented empiricism is accepted, the way in which one conceives of the relationship between science and philosophy changes: philosophy of science, concerned with problems about the aims and methods of science, becomes a vital part of science itself (too important for scientists to leave to philosophers!). For a substantiation of these claims, see, in addition to the papers already mentioned: "Induction, Simplicity and Scientific Progress" (1979); "Science, Reason, Knowledge and Wisdom: A Critique of Specialism" (1980); *From Knowledge to Wisdom*, Chapter 9 (1984); and *The Comprehensibility of the Universe* (1998, Oxford University Press).

After putting forward aim-oriented empiricism, in 1974, I have been concerned to develop the view, and spell out its implications for science and the philosophy of science: this has been brought to fruition in *The Comprehensibility of the Universe* (OUP, 1998). But I have also been concerned to *generalize* the conception of scientific rationality embodied in aim-oriented empiricism, and *apply* it to other branches of academic inquiry, and to other fields of human endeavour, besides science. Here, in a sense, I have followed Popper's example. Just as Popper generalizes *falsificationism* so that it becomes *critical rationalism*, I have generalized *aim-oriented empiricism* so that it becomes *aim-oriented rationalism*. Aim-oriented rationalism becomes relevant whenever our basic *aims* are problematic, and we need therefore to improve our aims and methods as we proceed. *The* application of this idea is to the task of creating sustainable global civilization. All this corrects and brings up to date the Enlightenment Programme of the 18th century, which sought to learn from scientific progress how to achieve social progress towards a more enlightened world. It is above all in my book *From Knowledge to Wisdom* that I try to carry this programme through. Most of my work yet to come will be concerned to develop further

this research programme: it is the central concern of my projected books, *How Can We Build a Better World?* and *Implications of Wisdom*. In *The Odd Couple* I argue that the History and Philosophy of Science ought to take up much more actively these urgent issues.

My work on quantum theory straddles both of the above two fundamental problems. In tackling the problem of how to put together the physical universe and the human world I have sought to solve the harshest version of this problem. Instead of blurring the problem at the edges by adopting an instrumentalistic interpretation of scientific knowledge, from the outset I have tried to confront the problem in its severest form by adopting a realist, even an essentialist interpretation of theoretical scientific knowledge. At once one is faced with the problem of how quantum theory can be interpreted realistically. Since 1972, the year of my first publication on the subject, I have argued, in a series of publications, that a new version of quantum theory is required that eschews all mention of measurement in its basic postulates, specifies precisely, in quantum mechanical terms, the physical conditions for probabilistic transitions to occur, and at the same time solves, in a micro-realistic manner, the central "quantum wave/particle" dilemma - so that quantum theory can stand on its own feet, with its own quantum ontology, independently of any part of classical physics. As the argument has developed over the years, it has become clear that the failure of orthodox quantum theory to solve the quantum wave/particle problem - its failure to be open to a realist interpretation - renders the theory imprecise, ambiguous, *ad hoc*, lacking in explanatory power, restricted in scope and resistant to unification. In other words, from the standpoint of aim-oriented empiricism, with its emphasis on *unity* as a vital feature physical theory must possess to be acceptable, the *disunity* of orthodox quantum theory renders the theory severely problematic despite its massive empirical success. Quantum theory constitutes an important test case for aim-oriented empiricism. And there is a further point. As I have mentioned, aim-oriented empiricism claims to provide a rational (if fallible and non-mechanical) method of scientific discovery, first explicitly exploited by Einstein in developing special and general relativity. In advocating this view, I am at once confronted by the challenge: can I demonstrate the effectiveness of this method of discovery by putting it into scientific practice and myself making a scientific discovery? In response to this challenge, I have tried to develop a version of quantum theory free of the defects I see in the orthodox version of the theory. The idea that I have pursued is that probabilistic transitions occur when new particles are created (measurement, involving detection, being a special case of particle creation). I have recently solved the problem of capturing this idea in a new, precise, testable version of quantum theory: see my paper in *Physics Letters A 187* (1994), pp. 351-355. This paper brings 25 years of research to something like a successful conclusion (although problems still remain to be solved, such as how to extend the idea to relativistic quantum theory).

At the time of my first publication on quantum theory, in 1972, when I argued that a new version of the theory is needed which makes no use of the imprecise notion of "measurement" in its basic postulates, and specifies precise quantum mechanical conditions for probabilistic transitions to occur, few people indeed were thinking along these lines. Subsequently, however, more and more research workers have come to take these ideas seriously. In a series of papers, published from 1973 onwards, John Bell independently developed the argument that quantum theory needs to eschew all use of the imprecise notion of "measurement" in its basic postulates. In my 1988 publication on quantum theory, I refer to the work of a number of physicists who have tried to solve the problem of specifying precise quantum conditions for probabilistic transitions to occur - work published subsequent to my 1972 paper. Research in this area received a tremendous boost from the paper of Ghirardi,

Rimini and Weber (GRW) published in 1986 (*Physical Review D*34, pp. 470-91). In this paper GRW put forward a version of quantum theory that is precisely of the type that I argued for in 1972. The version of quantum theory that I have been attempting to develop since 1972 is of the same general type as the GRW theory, though it differs from it in physical details. With my latest publication on the subject, my version of non-relativistic quantum theory becomes a viable alternative, I believe, to the GRW theory, and to the orthodox and Bohm interpretations of quantum theory.

In attempting to indicate the *kind* of theory we should seek to develop in order to overcome the defects of orthodox quantum theory, I am of course doing no more than attempting to practise what I preach. Most current views in the philosophy of science make a sharp distinction between science and philosophy of science. Aim-oriented empiricism, to the contrary, insists that, for science to be intellectually rigorous, it is essential that some discussion of rival aims and methods (i.e. more or less specific philosophies of science) forms an integral part of science itself. Exploration and assessment of possible and actual aims for scientific research becomes a vital part of both science and philosophy of science. It is in this way that my work on quantum theory, striving to indicate the kind of new version of quantum theory we should *aim* to develop, is my attempt to illustrate in practice what philosophy of physics becomes once aim-oriented empiricism is accepted.

I have found working on quantum theory a challenging and chastening experience. It has taught me much about science; above all it has taught me just how difficult it is to make any worthwhile contribution to science. In my view, all philosophers of science ought to spend at least some of their time in struggling with some serious *scientific* problem; without some sort of first-hand experience of scientific research, one's understanding of science is likely to remain inadequate. Even if the quality of one's scientific work does not amount to much, the quality of one's work in the philosophy of science can only be enhanced.

My book *The Comprehensibility of the Universe* (OUP, 1998) amounts to a radical reformulation and development of previous work on aim-oriented empiricism, especially in solving problems of simplicity and induction. *The Human World in the Physical Universe* (Rowman and Littlefield, 2001) gives a comprehensive treatment of the first of my two basic problems. This is further developed in *Cutting God in Half – and Putting the Pieces Together Again: A New Approach to Philosophy* (Pentire Press, 2010). *Is Science Neurotic?* (Imperial College Press, 2004) further develops the argument of *From Knowledge to Wisdom. Wisdom in the University* (edited by me and Ron Barnett, Routledge, 2008), and *Science and the Pursuit of Wisdom: Studies in the Philosophy of Nicholas Maxwell* (edited by L. McHenry, Ontos Verlag, 2009), are collections of essays by various authors commenting on my work, and including contributions from me.

### **Comments on Selected Publications**

#### 1. Physics and Common Sense (1966).

This paper tackles the problem of how the world as conceived of by theoretical physics can be reconciled with the world as revealed to us by personal experience (a problem that lies at the heart of the mind/body problem). It is argued that theoretical physics at most seeks to provide us with a comprehensive description of phenomena of a highly specialized, restricted type - namely of a type which permits prediction of future states of affairs (in the case of



isolated systems). (This presupposes determinism; the point can be generalized to take probabilism or indeterminism into account.) Physics, potentially, applies to all that there is, but does not tell us all that there is to know about all that there is. Thus the fact that theoretical physics, intended to apply in principle to all phenomena, says nothing about colours, sounds, smells, feelings, thoughts, values as experienced by us, constitutes no reason whatsoever for holding that all these things do not exist objectively in the real world. The theories of physics are designed specifically to ignore all reference to these experiential features of things. This constitutes a general statement and argument for my "two-aspect" solution to that part of the mind/body problem which is concerned with the problem of understanding how the physical aspect, and the experiential aspect, of processes going on inside our heads are in principle inter-related.

## 2. Can there be Necessary Connections between Successive Events? (1968 a).

This paper defends a point crucial to the argument of "Physics and Common Sense" - namely that it is *possible* for there to exist necessary connections between successive events, or successive physical states of isolated systems. On this view, the law-like statements of physical theories can legitimately be interpreted as analytic, and therefore necessary, statements. This does not mean, however, that physical theories cease to be factual or empirical: the entire empirical content of physical theories, interpreted in this "conjectural essentialist" fashion, is contained in an additional existential postulate to the effect that physical entities, of such and such a type, with such and such necessitating properties, do actually exist. If this postulate turns out to be false, because the physical entities it asserts to exist do not exist, then the (analytic) law-like statements of the theory are not false; there is simply nothing in existence to which they apply, so that they are vacuously true.

In defending the possibility of necessary connections between successive events, this paper challenges an assumption of much philosophy of science since Hume. It anticipates the subsequent work of D. Armstrong (1978, 1983), F. Dretske (1977) and M. Tooley (1977, 1987) on laws of nature. The work of these authors has, however, been criticized, in my view decisively, by B. van Fraassen. (See his *Laws and Symmetry*, 1989, for the above references, and the criticisms.) Van Fraassen's critique is based on the familiar point that a statement of a law of nature cannot be both logically necessary (or analytic) *and* empirical (or factual) at one and the same time. This criticism does not apply to my 1968 paper. For in that paper, I make it quite clear that law-like statements of physical theories are straightforwardly analytic, and in that sense logically necessary, thus being entirely devoid of any empirical content, all the empirical content of the theory being carried in a separate existential postulate which asserts the *existence* of entities with such and such necessitating properties. Popper's (1963) strictures against essentialism do not apply either to the conjectural essentialist position defended in my 1968 paper.

The deterministic notion of "necessitating physical property", developed in this paper, is, in subsequent papers, generalized to include the case of probabilism, and is exploited to develop a fully micro-realistic propensity version of quantum theory. In "Induction and Scientific Realism: Part 2" *BJPS*, 1992 or 1993), the entire argument in support of conjectural essentialism is reformulated and further developed.

## 3. Understanding Sensations (1968 b).

This contains the nub of my proposed "two-aspect" solution to that part of the mind/body problem I indicated in 1 above. The physical and the experiential are two different kinds of features, that need to be described, explained and understood in different kinds of ways.

Once this is understood, conceptual problems concerning the relationship between the physical and the experiential disappear.

In my view, subsequent literature on this aspect of the mind/body problem, having to do, in particular, with the reality of *qualia*, the adequacy of functionalism, the reality of subjectivity, the completeness or incompleteness in principle of natural science, suffers from having failed to take note of the basic point and argument of this paper. (I have in mind in particular the writings of Dennett, Lycan, Searle and T. Nagel on these questions.)

4. A Critique of Popper's Views on Scientific Method  
(1972 a).

Having formulated the problem of the rationality of science rather carefully, as the problem of (a) first specifying a sufficiently realizable and worthwhile *aim* for science, a set of *methods*, and (b) then providing a *rationale* for adopting the specified aim and methods in scientific practice, I consider criticisms of Popper made by Feyerabend and Lakatos, and reject them as not being too damaging. I then develop what seems to me a much more serious objection: Popper fails to provide an adequate *rationale* for the *aim* and *methods* he proposes in putting forward falsificationism. More seriously, falsificationism cannot do justice to the aim of science of seeking explanatory truth. In order to solve the problem of the rationality of science it is essential to construe the basic aim of science to be to improve knowledge of explanatory truth (the truth being presupposed to be explanatory, that is, the world being presupposed to be comprehensible).

This paper contains the key methodological idea that led me to aim-oriented empiricism, aim-oriented rationalism and the philosophy of wisdom, as expounded in my book *From Knowledge to Wisdom*.

5. A New Look at the Quantum Mechanical Problem of Measurement (1972 b).

In this paper I argue that orthodox quantum theory is vague and ambiguous because it appeals, in its basic postulates, to the inherently vague notion of measurement. In order to eliminate this serious defect, a new version of quantum theory needs to be developed which makes no mention of measurement in its basic postulates, and which specifies, in precise quantum mechanical terms, the physical conditions for probabilistic transitions to occur.

Essentially the same line of argument has been developed independently by John Bell in a number of papers from 1973 onwards, collected together in his book *Speakable and unspeakable in quantum mechanics* (1987). (However, until the advent of the work of Ghirardi, Rimini and Weber in 1986, Bell favoured a deterministic, hidden variable approach to developing an improved version of quantum theory, very different from the approach I advocated in my 1972 paper.)

6. The Rationality of Scientific Discovery  
(1974 a and b).

This paper develops further the argument of paper 4. It argues that in order to understand science as a rational enterprise, and in particular in order to solve the problem of induction, it is essential to interpret science as being committed to a substantial metaphysical conjecture about the nature of the universe, namely that the universe has some kind of comprehensible unified structure. Theories are acceptable in science to the extent that they (i) accord with the basic metaphysical conjecture of structural unity (ii) are empirically successful. Just because the basic metaphysical conjecture of structural unity is both profoundly influential over the

whole of science, and profoundly problematic, this conjecture needs to be explicitly articulated, criticized and developed as an integral part of science. This leads to a new conception of science - aim-oriented empiricism - according to which the aims and methods of science evolve with evolving knowledge, there being fixed methods only at the "metamethodological" level. According to this view, "philosophy of science" ought to form an integral part of science; further, a fallible, non-mechanical but rational method of discovery in science is possible.

Few scientists and philosophers of science would accept this conception of science, in that it is generally assumed that permanent *a priori* conjectures about the world are not permissible in science. The great exception is Einstein, who put aim-oriented empiricism into practice in developing the special and general theories of relativity - one essential reason for his success - and who later explicitly advocated something like aim-oriented empiricism, even though he called it a "miracle creed". (These questions are discussed in more detail in "Induction and Scientific Realism: Part 3" to appear in the *BJPS*, 1993.)

In his book *Science as a Human Endeavor* (1978), Professor Kneller gives an extended and highly favourable account of the conception of science developed in this paper. He remarks that "Maxwell's theory of aim-oriented empiricism is the outstanding work on scientific change since Lakatos, and his thesis is surely correct." Having discussed logical empiricism and the work of Popper, Kuhn, Lakatos and Feyerabend, Kneller concludes: "Of the theories of scientific change and rationality that I know, Maxwell's is my first choice. It is broad in scope, closely and powerfully argued." (See below for further details.)

#### 7. Towards a Micro Realistic Version of Quantum Mechanics (1976 a and b).

In the great debate over the acceptability of quantum theory in the 1920's, 30's and later, two opposing positions emerged. Bohr, Heisenberg and others argued, on the one hand, that both classical micro-realism and classical determinism must be abandoned: Einstein, Schrodinger and others argued, on the other hand, that both classical micro-realism and classical determinism must be retained (orthodox quantum theory thus being ultimately unacceptable in that it clashed with these two features of classical physics). In the heat of the battle, a third position was overlooked: this retains classical micro-realism but abandons determinism in favour of probabilism. It is above all Karl Popper who has opened up the possibility of this third position with his propensity interpretation of probability and quantum theory (see for example Popper's "Quantum Mechanics Without 'the Observer'" in *Quantum Theory and Reality*, ed. Bunge, 1967.) There are however serious inadequacies in the way Popper develops the idea in detail. In the first place, Popper regarded propensities as being properties of experimental set-ups, and vehemently denied that a propensity could be a property of a physical entity such as an electron. Secondly, Popper regards the idea that "wave-packet-collapse" might be a real physical process "the great quantum muddle". The outcome is that Popper's interpretation of quantum theory continues to have all the undesirable features of orthodox quantum theory, and fails to specify precise physical conditions for probabilistic events to occur, in purely quantum mechanical terms. In the present paper, I try to amend these defects in Popper's general approach. The result is a propensity version of quantum theory very different from Popper's; in the paper I suggest how this version of quantum theory, even in its present incomplete state, might be experimentally testable.

#### 8. *What's Wrong With Science?* (1976).

This book extends the argument of "The Rationality of Scientific Discovery" in at least two respects. First, aim-oriented empiricism is extended from theoretical physics to apply to the whole of science and technology. The problematic aim of discovering *explanatory* truth is a special case, it is argued, of the more general, but equally problematic, aim of discovering *important* truth - the aim of the whole of science and technology. Second, aim-oriented empiricism is generalized to constitute a general theory of rational action - aim-oriented rationality - which stresses the fundamental and general importance of seeking to improve our aims and methods whenever our basic aims are problematic, whatever we may be doing. This leads to a new conception of the social sciences as social methodology or social philosophy.

9. Induction, Simplicity and Scientific Progress (1979).

This paper further clarifies the argument of "The Rationality of Scientific Discovery", and illustrates aim-oriented empiricism by describing the way in which metaphysical blueprints associated with physics have evolved from Newton to Einstein.

10. Science, Reason, Knowledge and Wisdom: A Critique of Specialism (1980 a).

This paper further extends and develops the ideas of earlier work, articulating and defending the overall conception of intellectual inquiry that emerges from this work. According to this conception, rational inquiry needs to tackle both specialized problems and fundamental, general problems that cut across diverse specialized academic disciplines; furthermore, it is vital that there is an interplay of ideas and arguments, in both directions, between specialized research and discussion of fundamental inter-disciplinary problems. Rational inquiry ought to be devoted to helping us solve our most fundamental and urgent problems encountered in life. In effect, the paper provides a new version of the basic creed of the Enlightenment: reason, it is argued, needs to be devoted primarily to the achievement of wisdom rather than knowledge. The paper has far reaching implications for education, in that it implies that all education, however specialized, ought to include some discussion of general, fundamental problems, and the way in which specialized problems are related to fundamental problems.

11. Instead of Particles and Fields (1982).

This paper develops further my micro realistic version of quantum theory, according to which quantum theory in the first instance specifies how the propensities of micro systems (neither particles nor fields) evolve and interact with each other, in the absence of measurement. It is postulated that probabilistic transitions are to be associated with particle creation. This version of quantum theory is in principle experimentally distinguishable from orthodox quantum theory.

12. *From Knowledge to Wisdom: A Revolution in the Aims and Methods of Science* (1984).

This is one of my most important publications to date. It sums up some twelve years of work. In it I argue that academic inquiry as a whole would be both more intellectually rigorous and, potentially, of greater human value if it took as its basic intellectual aim to promote, by rational means, not *knowledge* merely, but rather personal and social *wisdom* in life. (Wisdom is defined as the capacity to realize what is of value; it includes and goes

beyond knowledge, understanding and technological know-how.) The argument has implications not just for the whole of the history and philosophy of science but, much more important, for science itself, above all for social inquiry, indeed for every branch and aspect of the academic enterprise, and even for values and ideals that guide the way we live. (Some reviews are enclosed below.)

13. Science and Values (1984 b), From Knowledge to Wisdom (1984), and From Knowledge to Wisdom: the Need for an Intellectual Revolution (1985 a).

These papers provide different summaries of the basic argument of *From Knowledge to Wisdom*.

14. Are Probabilism and Special Relativity Incompatible? (1985 b).

In this paper an argument is expounded which seems to establish that probabilism and special relativity are incompatible. The argument is examined critically, and its implications are considered for quantum theory, and for theoretical physics as a whole. The paper brings together, develops and applies ideas argued for in earlier works: in particular those discussed above in 2, 5, 9 & 10. The paper has implications for the acceptability of the version of quantum theory (QT) developed in 7 & 11. This explicitly probabilistic version of QT postulates instantaneous wave packet collapse as a real physical phenomenon, which is compatible with experimental results obtained by Aspect et al., but which conflicts with special relativity (SR). This might seem to be a decisive reason for rejecting this version of QT. If however *all* fundamentally probabilistic theories are incompatible with SR (probabilism as such being incompatible with SR), the fact that my probabilistic version of QT is incompatible with SR provides no grounds whatsoever for rejecting it.

The paper endeavours to apply and illustrate in practice the aim-oriented empiricist methodology of discovery, involving and interplay of physical, methodological and metaphysical considerations, which is argued for in  
It is suggested, for example that in order to unify QT and general relativity, we need to develop a new dynamic probabilistic geometry.

15. Methodological Problems of Neuroscience (1985).

This paper applies the methodological arguments of 10 above to the neurosciences. It is argued that a too restrictively specialist, anti-fundamentalist approach has had damaging consequences for the whole research effort seeking to improve our understanding of how the brain works. An overall research programme is proposed, based on the key idea of the *evolution of control*, which, it is argued, would be more fruitful than current research programmes.

16. Quantum Propensiton theory: A Testable Resolution of the Wave/Particle Dilemma (1988 a).

In this fifty page article, the outcome of at least sixteen years of work on the philosophy of quantum theory, I put forward a possible solution to what is, I argue, the basic problem confronting attempts to understand the quantum world: What is the nature of quantum objects, such as electrons, protons and atoms, in view of their apparently contradictory wave and particle properties? In order to solve the problem it is essential, I argue, to abandon the

misguided attempt to understand quantum objects in quasi-classical, deterministic terms. Instead, granted that the quantum world is fundamentally probabilistic in character, we need to recognize that quantum objects are a new kind of probabilistic object, quite different from anything encountered within deterministic classical physics. Quantum objects are, I argue, *discrete propensities*. This leads to a clarification of the propensity micro-realistic version of quantum theory proposed in earlier papers of quantum theory. Even though further theoretical work is needed to formulate the theory precisely, the theory is sufficiently precise as it stands to be experimentally distinguishable from orthodox quantum theory, at least in principle.

17. How Can We Build a Better World? (1991).

A fresh formulation of one important strand of the argument of *From Knowledge to Wisdom*.

18. Induction and Scientific Realism: Einstein versus van Fraassen (1993).

This three part paper develops further the aim-oriented empiricist conception of science which I first put forward in 1974. It shows in some detail how Einstein made essential, implicit use of aim-oriented empiricism in developing the special and general theories of relativity, and later came close to advocating the view explicitly.

19. Does Orthodox Quantum Theory Undermine, or Support, Scientific Realism? (1993).

This paper turns conventional wisdom on its head and argues that orthodox quantum theory inadvertently provides strong support for scientific realism, in that serious defects in the theory arise as a direct result of the instrumentalistic character of the theory, some such defects being inevitable features of any instrumentalistic theory.

20. Particle Creation as the Quantum Condition for Probabilistic Events to Occur (1994).

This paper provides a precise formulation of the fully micro realistic version of quantum theory I have developed over 20 years. This fundamentally probabilistic version of quantum theory solves the problem of wave/particle duality and the measurement problem, recovers the empirical success of orthodox quantum theory, and yields predictions that differ from the orthodox theory for as yet unperformed experiments.

21. *The Comprehensibility of the Universe: A New Conception of Science* (Oxford University Press, 1998).

In this book I argue that the thesis that the universe is physically comprehensible, far from being a wild speculation, is as secure an item of scientific knowledge as anything theoretical ever can be in science. My claim is that this becomes clear once we get the nature of science properly into focus.

Orthodox empiricism holds that, in science, theories must be accepted and rejected with respect to evidence, no substantial thesis about the world being accepted permanently as a part of knowledge independently of evidence. If simplicity considerations influence selection of theory in addition to empirical considerations, this must not result in science accepting permanently that the universe is simple. Given this orthodox

conception of science, the claim that science has already established that the universe is comprehensible is a nonsense. But in the book I show that orthodox empiricism is untenable. In order to proceed at all, science must make some kind of assumption about the nature of the universe.

At once the problem arises: What ought this assumption to be, and what justification can there be for making it? The solution to this ancient problem, I argue, is to see science as making a hierarchy of cosmological assumptions concerning the comprehensibility and knowability of the universe, these assumptions becoming increasingly insubstantial as one ascends the hierarchy. Corresponding to these cosmological assumptions there are methodological rules which, together with empirical considerations, govern acceptance and rejection of scientific theories. The more substantial of these assumptions (and the methods that correspond to them) evolve with evolving scientific knowledge; the more insubstantial are permanent items of scientific knowledge, upheld independently of empirical considerations. Near the bottom of the hierarchy, there is the rather substantial assumption that the universe is physically comprehensible in the sense that there exists something physical, present throughout all phenomena, which does not change but which determines the way things do change, and in terms of which phenomena can, in principle, be explained and understood. This assumption may or may not be true, but it deserves to be accepted as a part of scientific knowledge, I argue, because of its astonishing fruitfulness, in that the search for explanatory theories in science has met with astonishing apparent empirical success. At the top of the hierarchy there is the insubstantial assumption that the universe is partially knowable in the sense that we can acquire some knowledge of something: there can be no circumstances in which it can aid the growth of knowledge to abandon this assumption. All this might be described as "Post-Popperian Kantianism".

This "hierarchical" view, I argue, solves the central problems of what scientific method is, and how and why it is so astonishingly successful in enabling science to increase our knowledge of Nature. It also solves a number of other outstanding problems associated with science - problems of induction, verisimilitude, discovery, and in particular the problem of simplicity.

In connection with the last problem, even though it is widely recognized that theories, in order to be acceptable in science, must be "simple", "elegant", "unified" or "beautiful", so far no one has been able to say what this mysterious feature of "simplicity" or "beauty" is (or why scientists are justified in choosing theories that possess it). Even Einstein confessed that he was baffled. The problem arises because a simple theory can always be reformulated so that it becomes complex and ugly, and vice versa. I show how my "hierarchical" view solves the problem. The more adequately physical theories exemplify the idea that the universe is comprehensible, so the simpler or more unified they are. What matters is what theories assert about the world; the way they are formulated is irrelevant.

I also claim that my new conception of scientific rationality has, when generalized, important implications for a wide range of other human endeavours, including the endeavour to create a better, wiser world (see my *From Knowledge to Wisdom* (Blackwell, 1984)).

22. *The Human World in the Physical Universe: Consciousness, Free Will and Evolution* (Rowman and Littlefield, 2001).

How is it possible for the world as we experience it to exist embedded in the physical universe? How can there be sensory qualities, consciousness, freedom, science and art, friendship, love, justice - all that which gives meaning and value to life - if the world really is more or less as modern science tells us it is? This is the problem that is tackled by this book.

The solution proposed is that physics describes only a selected aspect of all that exists - that aspect which determines the way events unfold. Sensory qualities, inner experiences, consciousness, meaning and value, all these exist but lie beyond the scope of physics, and of that part of science that can be reduced to physics. Furthermore, these human features of the world are to be explained and understood, not scientifically, but "personalistically", a kind of understanding distinct from, and not reducible to, science. This view that the world is riddled with what may be called "double comprehensibility" leads to a proposed solution to the philosophical mind/body problem, and to the problem of free will; it leads to a reinterpretation of Darwin's theory of evolution, and to an account of the evolution of consciousness and free will. After a discussion of the location of consciousness in the brain, the book concludes with a proposal as to how academic inquiry might be changed so that it becomes a kind of inquiry rationally designed to help humanity create a more civilized human world in the physical universe.

23. Is Science Neurotic? *Metaphilosophy* 33, no. 3, April 2002, pp. 259-299.

Neurosis can be interpreted as a methodological condition which any aim-pursuing entity can suffer from. If such an entity pursues a problematic aim B, represents to itself that it is pursuing a different aim C, and as a result fails to solve the problems associated with B which, if solved, would lead to the pursuit of aim A, then the entity may be said to be "rationalistically neurotic". Natural science is neurotic in this sense in so far as a basic aim of science is represented to be to improve knowledge of factual truth as such (aim C), when actually the aim of science is to improve knowledge of explanatory truth (aim B). Science does not suffer too much from this neurosis, but philosophy of science does. Much more serious is the rationalistic neurosis of the social sciences, and of academic inquiry more generally. Freeing social science and academic inquiry from neurosis would have far reaching, beneficial, intellectual, institutional and cultural consequences.-----

### **Comments on work by N. Maxwell**

"Maxwell's theory of aim-oriented empiricism is the outstanding work on scientific change since Lakatos, and his thesis is surely correct. Scientific growth should be rationally directed through the discussion, choice, and modification of aim-incorporating blueprints rather than left to haphazard competition among research traditions seeking empirical success alone."

"Of the theories of scientific change and rationality that I know, Maxwell's is my first choice."



It is broad in scope, closely and powerfully argued, and is in keeping with the purpose of this book, which is to see science in its totality. No other theory provides, as Maxwell's does in principle, for the rational direction of the overall growth of science."  
(Professor George F. Kneller, *Science as a Human Endeavor*, Columbia University Press, 1978, p. 84 and p. 91.)

Comments on: Nicholas Maxwell, *From Knowledge to wisdom: A Revolution in the Aims and Methods of Science* (Basil Blackwell, Oxford & New York, 1984; Paperback, April 1987).

"Maxwell's book is a major contribution to current work on the intellectual status and social functions of science ... [It] comes as an enormous breath of fresh air, for here is a philosopher of science with enough backbone to offer root and branch criticism of scientific practices and to call for their reform." (Dr. David Collingridge, *Social Studies of Science*.)

"The essential idea is really so simple, so transparently right ... It is a profound book, refreshingly unpretentious, and deserves to be read, refined and implemented." (Dr. Stewart Richards, *Annals of Science*.)

"... a strong effort is needed if one is to stand back and clearly state the objections to the whole enormous tangle of misconceptions which surround the notion of science to-day. Maxwell has made that effort in this powerful, profound and important book." (Dr. Mary Midgley, *University Quarterly*.)

"A humanist and philosopher, Maxwell presents his ideas with eloquence and conviction. This book will appeal to persons in many different disciplines - from science to social studies." (*American Library Association*.)

"Maxwell is advocating nothing less than a revolution (based on reason, not on religious or Marxist doctrine) in our intellectual goals and methods of inquiry ... There are altogether too many symptoms of malaise in our science-based society for Nicholas Maxwell's diagnosis to be ignored." (Professor Christopher Longuet-Higgins, *Nature*.)

"This book is a provocative and sustained argument for a 'revolution', a call for a 'sweeping, holistic change in the overall aims and methods of institutionalized inquiry and education, from knowledge to wisdom' ... Maxwell offers solid and convincing arguments for the exciting and important thesis that rational research and debate among professionals concerning values and their realization is both possible and ought to be undertaken." (Professor Jeff Foss, *Canadian Philosophical Review*.)

"Wisdom, as Maxwell's own experience shows, has been outlawed from the western academic and intellectual system ... In such a climate, Maxwell's effort to get a hearing on behalf of wisdom is indeed praiseworthy." (Dr. Ziauddin Sardar, *Inquiry*.)

"Maxwell has, I believe, written a very important book which will resonate in the years to come. For those who are not inextricably and cynically locked into the power and career structure of academia with its government-industrial-military connections, this is a book to read, think about, and act on." (Dr. Brian Easlea, *Journal of Applied Philosophy*.)

"Maxwell's argument ... is a powerful one. His critique of the underlying empiricism of the philosophy of knowledge is coherent and well argued, as is his defence of the philosophy of wisdom. Most interesting, perhaps, from a philosophical viewpoint, is his analysis of the social and human sciences and the humanities, which have always posed problems to more orthodox philosophers, wishing to reconcile them with the natural sciences. In Maxwell's schema they pose no such problems, featuring primarily ... as methodologies, aiding our pursuit of our diverse social and personal endeavours.

"This is an exciting and important work, which should be read by all students of the philosophy of science. It also provides a framework for historical analysis and should be of interest to all but the most blinkered of historians of science and philosophy." (Dr. John Hendry, *British Journal for the History of Science*.)

"[T]here is...much of interest and, yes, much of value in this book...Maxwell is one of those rare professional philosophers who sees a problem in the divorce between thought and life which has characterized much of modern philosophy (and on both sides of the English channel, not merely in the so-called "analytic" tradition"); he wishes to see thought applied to life and used to improve it. As a result, many of the issues he raises are of the first importance. . . He has . . . produced a work which should give all philosophers and philosophically-minded scientists cause for reflection on their various endeavors; in particular, it should give philosophers who are content to be specialists a few sleepless nights." (Professor Steven Yates, *Metaphilosophy*.)

### Reviews of *From Knowledge to Wisdom*

1. C. Longuet-Higgins, "For goodness sake", *Nature* 312, 15 Nov. 1984, p.204.
2. S. Rose, "Science in court", *New Statesman*, 8 March 1985, p. 30.
3. *La Recherche* 16, April 1985, p. 506.
4. P. Enfield, "Making Inquiries", *The Times Literary Supplement*, 29 March 1985, p. 366.
5. *Science for People*, January 1985.
6. S. Richards, "Philosophical Aspects of Science", *Annals of Science* 42, May 1985, pp. 348-9.
7. D. Collingridge, "Reforming Science", *Social Studies of Science* 15, Nov. 1985, pp. 763-69.
8. *British Book News*, June 1985.
9. J. Kekes, "The Fate of the Enlightenment Programme", *Inquiry* 28, Sept. 1985, pp. 388-98.
10. J. Foss, Review Article, *Canadian Philosophical Reviews*, March 1986.
11. Mary Midgley, "Is Wisdom Forgotten?", *University Quarterly: Culture, Education and Society* 40, 1986, pp. 425-7.
12. Z. Sardar, "Lies, Damn Lies ... And a Way of Getting Out of Them", *Inquiry*, August 1985, pp. 66-7.
13. G. van Steendam, Review, *Bijdragen, tijdschrift voor filosofie en theologie* 46, 1985, p. 214.
14. *American Library Association*, October, 1984.

15. *Library Journal New York*, January 1985.
16. *Booklist Chicago*, December 1984.
17. B. Easlea, Review, *Journal of Applied Philosophy* 3, 1986, pp. 139-40.
18. P. Eichman, Review, *Perspectives on Science & Christian Faith* 42, March 1990, pp. 56-7.
19. C. Bidon-Chanal, Review Article, *Critique of Anthropology* 8, 1988; see Maxwell (1988 (c)) for my reply.
20. J. Hendry, Review, *Brit. J. Hist. Sci.* 22, 1989, pp. 246-7
21. J. Ravetz, Review, *Brit. J. Phil. Sci.*, 1987, pp. 265-8.
22. N. Koertge, Review, *Isis*, 1989.
23. D. Kenny, Review, *Metascience*, December 1989, pp. 115-7.
24. S. Yates, "From Knowledge to Wisdom: Notes on Maxwell's Call for Intellectual Revolution", *Metaphilosophy* 20, 1989, pp. 371-86.

### **Quotations from Reviews of *The Comprehensibility of the Universe***

"Maxwell performs a heroic feat in making the physics accessible to the non-physicist ... Philosophically, there is much here to stimulate and provoke."

"there are rewarding comparisons to be made between the functional roles assigned to Maxwell's metaphysical "blueprints" and Thomas Kuhn's paradigms, as well as between Maxwell's description of theoretical development and Imre Lakatos's methodology of scientific research programmes."

Anjan Chakravartty, *Times Higher Educational Supplement*, 24 September 1999, p. 24.

-----

"Maxwell ... has shown that it is absurd to believe that science can proceed without some basic assumptions about the comprehensibility of the universe."

"Throughout this book, Maxwell has meticulously argued for the superiority of his view by providing detailed examples from the history of physics and mathematics."

"*The Comprehensibility of the Universe* attempts to resurrect an ideal of modern philosophy: to make rational sense of science by offering a philosophical program for improving our knowledge and understanding of the universe. It is a consistent plea for articulating the metaphysical presuppositions of modern science and offers a cure for the theoretical schizophrenia resulting from acceptance of incoherent principles at the base of scientific theory."

Leemon McHenry, *Mind*, vol. 109, January 2000, pp. 162-166.

-----

"This admirably ambitious book contains [much] thought-provoking material ... Maxwell's treatment of the descriptive problem of simplicity, and his novel proposals about quantum mechanics deserve special note."

"Maxwell's highly informed discussions of the changing ontologies of various modern physical theories are enjoyable, and the physical and mathematical appendix of the book should be a great help to the beginner."

Sherrilyn Roush, *The Philosophical Review*, vol. 110, January 2001, pp. 85-7

-----

"Nicholas Maxwell has struck an excellent balance between science and philosophy."

"The detailed discussions of theoretical unification in physics - from Newton, Maxwell and Einstein to Feynman, Weinberg and Salam - form some of the best material in the book. Maxwell is good at explaining physics."

"Through the interplay of metaphysical assumptions, at varying distances from the empirical evidence Maxwell shows, rather convincingly, that in the pursuit of rational science the inference from the evidence to a small number of acceptable theories, out of the pool of rival ones, is justifiable."

"Its greatest virtue is the detailed programme for a modern version of natural philosophy. Along the way, Maxwell homes in on the notion of comprehensibility by the exclusion of less attractive alternatives. In an age of excessive specialization the book offers a timely reminder of the close link between science and philosophy. There is a beautiful balance between concrete science and abstract philosophy."

In the "excellently written Appendix some of the basic mathematical technicalities, including the principles of quantum mechanics, are very well explained".

"Einstein ... held that 'epistemology without science becomes an empty scheme' while 'science without epistemology is primitive and muddled'. Maxwell's new book is a long-running commentary on this aphorism."

Friedel Weinert, *Philosophy*, vol. 75, April 2000, pp. 296-309.

-----

"Nicholas Maxwell's ambitious aim is to reform not only our philosophical understanding of science but the methodology of scientists themselves ... Maxwell's aim oriented empiricism [is] intelligible and persuasive ... the main ideas are important and appealing ... an important contribution to the philosophy of physics."

J. J. C. Smart, *British Journal for the Philosophy of Science*, vol. 51, 2000, pp. 907-911.

"Maxwell has clearly spent a lifetime thinking about these matters and passionately seeks a philosophical conception of science that will aid in the development of an intelligible physical worldview. He has much of interest to say about the development of physical thought since Newton. His comprehensive coverage and sophisticated treatment of basic problems within the philosophy of science make the book well worth studying for

philosophers of science as well as for scientists interested in philosophical and methodological matters pertaining to science."

Cory F. Juhl, *International Philosophical Quarterly*, vol. XL, No. 4, December 2000, pp. 517-8.

"some of [Maxwell's] insights are of everlasting importance to the philosophy of science, the fact that he stands on the shoulders of giants (Hume, Popper) notwithstanding ... My overall conclusion is that *Universe* is an ideal book for a reading group in philosophy of science or in philosophy of physics. Many of the pressing problems of the philosophy of science are discussed in a lively manner, controversial solutions are passionately defended and some new insights are provided; in particular the chapter on simplicity in physics deserves to be read by all philosophers of physics."

F.A. Muller, *Studies in History and Philosophy of Modern Physics* 35, 2004, pp. 109-110 and p. 117.

*Quotations from Reviews of "The Human World in the Physical Universe"*

"Ambitious and carefully-argued...I strongly recommend this book. It presents a version of compatibilism that attempts to do real justice to common sense ideas of free will, value, and meaning, and...it deals with many aspects of the most fundamental problems of existence." David Hodgson, *Journal of Consciousness Studies* 9, 2002, pp. 93-94.

"Maxwell has not only succeeded in bringing together the various different subjects that make up the human world/physical universe problem in a single volume, he has done so in a comprehensive, lucid and, above all, readable way." M. Iredale, *Trends in Cognitive Sciences* 6, 2002, p. 225.

"...a bald summary of this interesting and passionately-argued book does insufficient justice to the subtlety of many of the detailed arguments it contains." Bernard Harrison, *Mind* 112, October 2003, pp. 768.

"Nicholas Maxwell takes on the ambitious project of explaining, both epistemologically and metaphysically, the physical universe and human existence within it. His vision is appealing; he unites the physical and the personal by means of the concepts of aim and value, which he sees as the keys to explaining traditional physical puzzles. Given the current popularity of theories of goal-oriented dynamical systems in biology and cognitive science, this approach is timely. . . The most admirable aspect of this book is the willingness to confront every important aspect of human existence in the physical universe, and the recognition that in a complete explanation, all these aspects must be covered. Maxwell lays out the whole field, and thus provides a valuable map of the problem space that any philosopher must understand in order to resolve it in whole or in part." Natika Newton, *Philosophical Psychology*, vol. 16, 2003, p. 149 & p. 156.

“This is a very complex and rich book. Maxwell convincingly explains why we should and how we can overcome the ‘unnatural’ segregation of science and philosophy that is the legacy of analytic philosophy. His critique of standard empiricism and defence of aim-oriented empiricism are especially stimulating” Thomas Bittner, *Philosophical Books* 45, 2004, p. 182.

“I recommend reading *The Human World in the Physical Universe* . . . for a number of reasons. First, [it] ... provides the best entrance to Maxwell’s world of thought. Secondly, [it] contains a succinct but certainly not too-detailed overview of the various problems and positions in the currently flourishing philosophy of mind. Thirdly, it shows that despite the fact that many philosophers have declared Cartesian Dualism dead time and again, with some adjustments, the Cartesian view remains powerful and can compete effortlessly with other extant views” Dr. F. A. Muller, *Studies in History and Philosophy of Modern Physics* 35, 2004, p. 119.

“Some philosophers like neat arguments that address small questions comprehensively. Maxwell’s book is not for them. *The Human World in the Physical Universe* instead addresses big problems with broad brushstrokes.” Rachel Cooper, *Metascience* 11, 2002, p. 402.

"A solid work of original thinking." L. McHenry, *Choice*, May 2002, pp. 1600-1601.

### Discussion of Aspects of N. Maxwell's Work

1. Mary Midgley, *Wisdom, Information and Wonder: What is Knowledge For?*, Routledge, 1989. See especially pp. 20-22.
2. Norman Dixon, *Our Own Worst Enemy*, Futura, 1988, pp. 273-4.
3. A. O'Hear, *An Introduction to the Philosophy of Science*, OUP, 1989, pp. 224-30.
4. Rom Harre, *Varieties of Realism*, Blackwell, 1986, pp. 26-32.
5. B. Burrows et al., *Into the 21st Century*, Adamantine Press, 1991, pp. 181-2.
6. R. S. Root-Bernstein, *Discovering*, Harvard UP, 1991, pp. 84-5 & 241.
7. I. Thompson, Real Dispositions in the Physical World, *Brit. J. Phil. Sci.* 39, 1988, pp. 67-79.
8. E. Squires, A Comment on Maxwell's Resolution of the Wave/Particle Dilemma, *Brit. J. Phil. Sci.* 40, 1989, pp. 413-7.
9. D. Dieks, Discussion: Special Relativity and the Flow of Time, *Phil. Sci.* 55, 1988, pp. 456-60. For my reply see: Maxwell, 1988 (b).
10. H. Stein, On Relativity Theory and Openness of the Future, *Phil. Sci.* 58, 1991, pp. 147-67. My reply has been published in *Philosophy of Science* 60, 1993, pp. 341- 348.
11. D.G. Elms, Wisdom Engineering - The Methodology of Versatility, *Int. J. Appl. Engng. Ed.* 5, 1989, pp. 711- 7.
12. D. Home & M. Whitaker, Ensemble Interpretations of Quantum Mechanics. A Modern Perspective, *Physics Reports* 210, 1992, pp. 292-3.

13. J. Warren, Towards a civilized humanity, *Philosophy Today* 14, September 1993, pp. 3-4.
14. David K. Scott and Susan M. Awbrey, *Transforming the University*, 1993, pp. 80-91.
15. R. Harre, *Varieties of Realism*, Blackwell, 1986, pp. 26-32.
16. A. O'Hear, *An Introduction to the Philosophy of Science*, OUP, 1989, pp. 224-230.
17. R. S. Root-Bernstein, *Discovering*, Harvard University Press, 1989, p. 84 and 241.
18. B. Burrows et al., *Into the 21st Century*, Adamantine Press, 1991, pp. 181-182.

Information about Undergraduate Courses in Philosophy of

Science taught by N. Maxwell in the Department of History and

Philosophy of Science at University College London.

## **DEPARTMENT OF HISTORY AND PHILOSOPHY OF SCIENCE**

### **COURSES IN PHILOSOPHY OF SCIENCE 1992-93 (N. Maxwell)**

There are four Courses:-

- (1) HPS 12; 1/2 unit; 1 term; begins October '92.

*Basic Problem:* How can human life exist - conscious, free, meaningful and of value - if the world really is more or less as modern science conceives it to be?

- (2) HPS 2; 1/2 unit; 1 term; begins January '93.

*Basic Problem:* How can science - and academic inquiry more generally - best help us build a better world?

- (3) HPS 7; 1 unit; 2 terms; consists of HPS 12 + HPS 2.

The first part of the Course is concerned with the question of how human life of value is possible, granted the scientific view of the world; the second part is concerned with the question of how science can best help that which is of value in life to flourish - granted that its possibility has been established!

There are two one-hour seminars per week for each Course, plus individual tutorials. All three courses are best taken as *third year* courses. Times of seminars are fixed, by mutual agreement, at the beginning of the Autumn and Winter terms, so that timetable clashes may be avoided.

HPS 12 and HPS 2 are assessed by means of an exam and one 5,000 word essay on a problem of each student's choice (selected in consultation with the lecturer). HPS 7 is assessed by means of course work, an exam, and a 5,000 word essay.

- (4) HPS 8; 1 unit; 2 terms. This Course studies in greater depth issues explored in HPS

## 12 and HPS 2.

The aim of the Courses is to encourage students to tackle the above basic problems rationally - that is, to explore imaginatively and critically rival possible solutions to the problems, to find out something about the history of the discussion of the problems, and to consider the way in which these problems connect up with other important problems. The hope is that students will exploit the ideas, discoveries and arguments of others to develop their own ideas about these problems. Students doing the Courses will be expected to contribute to discussions in the seminars.

As one moves up the educational ladder, from primary school to postgraduate research, inquiry inevitably and quite properly becomes increasingly specialized in character. The danger in this is that important general, basic problems, that span many disciplines, may be increasingly lost sight of. A part of the aim of the Courses is help counteract this danger. The two basic problems to be discussed cut across almost all disciplinary boundaries. Both problems can be broken up into as many subordinate problems as we please.

Thus the basic problem of HPS 12 can be divided up into such problems as: What does modern science tell us about the world? What does it tell us about ourselves? Can everything in principle be explained and understood in physical terms? If not, why not? How is the non-physical (if it exists) to be reconciled with the physical? How does the world as we experience it relate to the world of physics, made up of fundamental physical entities (whatever these may be)? What is the relationship between consciousness and the brain? How have we - and how has life more generally - come to exist in the world? What role does Darwin's theory of evolution play in helping us to understand how and why we have come to exist? What is the relationship between knowledge and understanding achieved in the physical, biological and social sciences? How can there be consciousness, freedom, meaning and value if everything occurs in accordance with some as-yet-to-be-discovered unified pattern of physical law?

The basic problem of HPS 2 can be divided up into such problems as: How does science improve our knowledge about the world? What is scientific method? What distinguishes science from non-science or pseudo-science? How reliable is scientific knowledge? What is the scope, and what are the limits, of scientific knowledge? What does scientific progress towards better knowledge have to teach us about how to make social progress towards a better world? What ought the priorities of scientific research to be, who ought to decide, and on what basis? How is pure research related to technological research, and to practical problems of living? What prospects are there for improved public understanding of science? What role ought the social sciences to play? Are the methods of the social sciences similar to, or different from, those of the natural sciences? How ought science to be related to the rest of society - to our political, economic and cultural activities and concerns? What kind of education best helps us to realize what is of most value to us in life? What is of most value in life? What kind of society best helps what is of value to flourish? How can we set about creating such a society - a genuinely civilized world? What are the most important social, economic, political and environmental problems that we need to solve in order to do this?

The physical, biological, social and technological sciences, history, philosophy and politics are all involved in these questions. It is hoped that those who do one or other of the above Courses will discover how such important general questions can be tackled in an intellectually



responsible manner even though one is (inevitably) largely ignorant of relevant background knowledge. If the academic enterprise is to be rational, it is essential that both specialized and general problems be tackled in an inter-dependent way - as indicated in the diagram.

### SOME RELEVANT BOOKS

#### *HPS 12*

- C. Blakemore and S. Greenfield, eds., *Mindwaves*, Blackwell, 1987.  
K. Campbell, *Body and Mind*, Notre Dame, 1970.  
P. Churchland, *Matter and Consciousness*, MIT press, 1988.  
D.C. Dennett, *Elbow Room*, Clarendon Press, 1984.  
J. Leplin, ed., *Scientific Realism*, University of California Press, 1984.  
W. Lycan, ed., *Mind and Cognition*, Blackwell, 1990.  
D.J. O'Conner, *Free Will*, Macmillan, 1973.  
K. Popper (& J. Eccles), *The Self and Its Brain, Part I*, Springer, 1977.  
D. Rosenthal, ed., *Materialism and the Mind-Body Problem*, Hackett, 1987.  
J. Searle, *Minds, Brains and Science*, BBC Publications, 1984.  
J.J.C. Smart, *Philosophy and Scientific Realism*, KRP, 1963.  
P. Smith & O.R. Jones, *The Philosophy of Mind*, CUP, 1986.

#### *HPS 2*

- D. Collingridge, *The Social Control of Technology*, Open University Press, 1980.  
B. Easlea, *Liberation and the Aims of Science*, Chatto & Windus, 1973.  
A. Einstein, *Ideas and Opinions*, Souvenir Press, 1973.  
D. Greenberg, *The Politics of Pure Science*, New American Library, 1971.  
R. Higgins, *The Seventh Enemy*, Hodder & Stoughton, 1978.  
G. Kneller, *Science as a Human Endeavor*, Columbia U.P., 1978.  
T.S. Kuhn, *The Structure of Scientific Revolutions*, Chicago U.P., 1970.  
I. Lakatos & A. Musgrave, eds., *Criticism and the Growth of Knowledge*, CUP, 1970.  
N. Maxwell, *From Knowledge to Wisdom*, Blackwell, 1984.  
C. Norman, *The God that Limps*, Norton, 1981.  
K.R. Popper, *Conjectures and Refutations*, RKP, 1963.  
K.R. Popper, *The Open Society and Its Enemies*, RKP, 1945.

UNIVERSITY OF LONDON  
(University College London)

B.Sc. DEGREE 1994

HPS 7: PHILOSOPHY OF SCIENCE I

10 June 1994: 10 to 1

Answer THREE questions, at least one from section A, and at least one from section B. In your answers, provide arguments relevant to the views you discuss. Avoid covering ground

covered in your final essay.

### SECTION A

1. Are conscious inner experiences brain processes?
2. 'Tastes, odours, colours, etc., so far as their objective existence is concerned, are nothing but mere names for something which resides exclusively in our sensitive body, so that if the perceiving creatures were removed, all of these qualities would be annihilated and abolished from existence.' (Galileo). Discuss.
3. Is free will possible in a deterministic universe?
4. Is understanding a person *as a person* something essentially different from, or the same as, understanding phenomena in terms of testable, explanatory theories, as in the natural sciences?
5. How can life be meaningful and of value if the world really is more or less as modern physical science conceives it to be?
6. Does Darwin's theory of evolution enable us to eliminate purposiveness from Nature? Or should the theory be interpreted as a theory about how and why purposiveness evolves in Nature?
7. Could a robot be conscious?

### SECTION B

8. 'I think I have solved a major philosophical problem: the problem of induction.' (Karl Popper). What is Popper's proposed solution? Does it solve the problem?
9. Is there a rational method of discovery in science?
10. Does science assume that the universe is comprehensible?
11. How can scientists' persistent preference for simple theories be justified?
12. Can aims for science be chosen rationally?  
PTO
13. In what ways ought values to influence science? In what ways ought values not to influence science?
14. Expound and assess reasons people may have for being critical of modern science.

### SECTION C

15. Is democratic global politics possible?
16. Describe one global problem and discuss the adequacy of modern science and technology

to contribute to a solution to the problem.

17. Does scientific progress have anything to teach us about how to achieve social progress towards a civilized world?

18. Ought social inquiry to be pursued as social *science* or social *philosophy*?

19. What changes, if any, would you make to modern academic inquiry in order to develop a kind of inquiry rationally designed to help humanity become civilized?

20. Are scientists to blame for the involvement of science in war?

21. Under what conditions will cooperation emerge in a world of egoists without central authority?

END OF PAPER

UNIVERSITY OF LONDON  
(University College London)

B.Sc. DEGREE 1994

HPS 8: PHILOSOPHY OF SCIENCE II

10 June 1994: 10 to 1

Answer THREE questions. In your answers, provide arguments relevant to the views you discuss. Avoid covering ground covered in your final essay.

1. Expound and assess Daniel Dennett's "multiple draft" theory of consciousness as set out in his *Consciousness Explained*.
2. Could a robot be conscious?
3. What do we see?
4. Expound and assess Thomas Nagel's "two-aspect" theory of consciousness as set out in his *The View from Nowhere*.
5. Can consciousness be explained and understood in terms of Darwin's theory of evolution?
6. Are there "qualia" associated with brain processes?

7. Does functionalism solve the mind/body problem?
8. Is psychology reducible to physics?
9. Can there be free will in a physicalistic universe?

END OF PAPER