

CURRICULUM VITAE

- Name:** JOHN DAVID BARROW
- Work Address:** Dept. of Applied Mathematics & Theoretical Physics, Centre for Mathematical Sciences, Cambridge University, Wilberforce Road, Cambridge CB3 0WA.
Tel: 01223-766696. Fax: 01223-765900.
Email: J.D.Barrow@damtp.cam.ac.uk
- Date of Birth:** 29th November 1952
- Place of Birth:** London, England
- Degrees:** BSc (Hons), Mathematics (University of Durham) 1974: 1st Class Honours.

DPhil, Astrophysics (University of Oxford) 1977. Thesis title: 'Non-Uniform Cosmological Models'. Supervisor: Professor D W Sciama FRS.
- Honorary Degrees:** D.Sc. University of Hertfordshire, 1999
D.Sc. University of Szczecin, 2007
D.Sc. University of Durham, 2008
D.Sc. University of Sussex, 2010
D.Sc. University of S. Wales, 2014
- Academic Career:** Ealing Grammar School 1964-71
Van Mildert College, Durham University 1971-4
Magdalen College & Dept. of Astrophysics, Oxford University
1974-7
Astronomy Dept., Univ. California Berkeley (Lindemann Fellow)
1977-8
Christ Church and Dept. of Astrophysics, Oxford (Junior Research Lecturer) 1977-80
Physics Dept., Univ. California Berkeley (Miller Fellow) 1980-1
Lecturer, Astronomy Centre, University of Sussex 1981-8
Nuffield Foundation Science Fellow, University of Sussex 1986-7
Senior Lecturer, Astronomy Centre, University of Sussex 1988-9
Reader, Astronomy Centre, University of Sussex, 1989
Professor, Astronomy Centre, University of Sussex 1989-99
Acting Director, Astronomy Centre, University of Sussex 1989-90
Royal Society Leverhulme Fellow, University of Sussex 1992-3
PPARC Senior Fellow, University of Sussex 1994-99
Director, Astronomy Centre, University of Sussex 1995-99

Professor of Mathematical Sciences, Dept. Applied Mathematics and Theoretical Physics, University of Cambridge, 1999-
Cambridge, 1999-
Director, Millennium Mathematics Project, University of

Professorial Fellow, Clare Hall, Cambridge 1999-
Vice President, Clare Hall, Cambridge, 2004-7.
Gresham Professor of Astronomy (and other Physical Sciences),
Gresham College, London 2003-7
First Eastern Visiting Cambridge Professor (China and Hong
Kong) 2005
Li Ka Shing Foundation Visiting Scholar (China and Hong Kong),
2006.
Fellow of Gresham College, 2007-10, 2012-15.
Emeritus Professor of Astronomy, Gresham College, 2007-8
Gresham Professor of Geometry, Gresham College, 2008-12
Emeritus Gresham Professor of Astronomy and Geometry, 2012-
15
President, British Science Association, Physics and Astronomy
Section, 2008-9.
President, British Science Association Mathematics Section, 2011-
12.
Fellow, Gresham College, 2012-2015

Awards:

Durham University Mathematical Prize 1973.
Durham University Prize 1974.
Collingwood Mathematical Prize (Durham University and London
Mathematical Society) 1974.
Johnson Memorial Prize (Oxford University) 1975.
Wallace Research Prize (Oxford University) 1977.
Lindemann Fellowship of the English Speaking Union of the
Commonwealth 1977.
Junior Research Lectureship, Christ Church, Oxford 1977.
Gravity Prize (5th), Gravity Foundation Awards 1979.
Miller Fellowship, University of California at Berkeley 1980.
Gravity Prize (3rd), Gravity Foundation Awards 1981.
Nominated for the Bhappu Prize of the International Astronomical
Union by the Council of the Royal Astronomical Society 1986/7.
Nuffield Foundation Science Fellowship 1986/87.
Samuel Locker Award in Astronomy 1989.
Gravity Prize (4th), Gravity Foundation Awards 1993
Royal Society Leverhulme Senior Fellowship 1992/3.
PPARC Senior Fellowship (5 years) 1994-9
Templeton Award 1995.
Gravity Prize (5th), Gravity Foundation Awards 1997.

Gordon Godfrey Visiting Professor of Physics, University of New South Wales, Sydney, 1998.
 Kelvin Medal, Royal Glasgow Philosophical Society, 1999
 Wellcome Sci-art 2000 Award, 2000
 Gordon Godfrey Visiting Professor, University of New South Wales, Sydney, December 2000.
 Italian Theatre Awards, Premi Ubu 2002 Prize for best play (awarded for *Infinites*).
 Gresham Professor of Astronomy, Gresham College, 2003-7
 Emeritus Gresham Professor of Astronomy, Gresham College, 2007-8
 Elected Fellow of the Royal Society (London), 2003
 Gordon Godfrey Visiting Professor of Physics, University of New South Wales, Sydney, November 2003.
 Italgas Prize for Promulgation of Science 2003, (awarded for *Infinites*).
 Lacchini Prize and Medal of the Unione Astrofili Italiani 2005.
 Honorary Concurrent Professor of Physics, University of Nanjing, China 2005-
 Queen's Anniversary Prize 2006 (to Millennium Mathematics Project).
 Templeton Prize, Templeton Foundation 2006.
 Honorary Citizen, City of Louisville, Kentucky 2006.
 Gresham Professor of Geometry, Gresham College 2008-12.
 Michael Faraday Medal and Prize, Royal Society 2008.
 Gresham Prize, Mercers Company and Corporation of London 2009 (also to Millennium Mathematics Project)
 Kelvin Medal and Prize, Institute of Physics, 2009.
 Elected Fellow of the Academia Europaea, 2009.
 L'Academie Internationale de Philosophie des Sciences, Titular Member, elected 2009.
 Premio Oriente Science (Prize), Colletti Foundation 2010.
 Merck-Serono Prize for Science and Literature, Merck-Serono, 2011.
 Gravity Research Foundation Research Essay 3rd prize 2011
 Christopher Zeeman Medal, London Mathematical Society and IMA, 2011
 Premio Antica Pignolo (Literary Prize), Venice 2012

Named Lectures: Centenary Gifford Lectures, Glasgow University 1989
 Elizabeth Scott Memorial Lecture, European Math. Society 1989
 Prime Minister's Science Seminar, 10 Downing St., 1989
 Collingwood Memorial Lecture, Durham University 1990
 Sigma-Tau-Laterza Lectures, University of Milan 1991

George Darwin Lecture, Royal Astronomical Society 1992
Spinoza Lecture, University of Amsterdam, Amsterdam 1993
University of London Annual Physics Lecture, Royal Holloway
College, London. 1993
Elizabeth Spreadbury Lecture, University College London 1994
BBV Science Lectures, Madrid, Bilbao & Tenerife 1994
Royal Institution Evening Discourse, 1994
Robert Boyle Memorial Lecture, Oxford 1996
Amnesty International Science Lecture, Oxford University 1997
Benedum Lecture, University of West Virginia, 1997
Kelvin Lecture, Royal Glasgow Philosophical Society, 1999
Royal Society of Arts Children's Christmas Lecture 1999
Nicki Shaw Lecture, Cambridge 2000
London Mathematical Society Popular Lectures, Leeds, Glasgow,
London, 2000
Flamsteed Lecture, University of Derby, 2000
Bologna 2000 Lecture, 2000
Tyndall Memorial Lecture, University of Bristol, 2001
Darwin Lecture, Darwin College, University of Cambridge, 2001
Whitrow Lecture, Royal Astronomical Society, 2002
Brasher Lecture, University of Kingston, 2002
Gresham Lectures, Gresham College, London 2003-7
Isaac Newton Memorial Lecture, King's School Grantham, 2004
Hubert James Lecture, Purdue University, 2004
Carl Von Weizsäcker Lectures, Hamburg University, 2004
McCrea Centenary Lecture, Sussex, 2004.
Finnish International Year of Physics, Univ. Helsinki, 2005
Wood Memorial Lecture, Newcastle University, 2005
Hamilton Lecture, Royal Dublin Society, Trinity College Dublin,
2005
Edinburgh Science Festival Address, St Giles Cathedral, 2005
Knight Lecture, Monkton College, Bath, 2006
Borderlands Lecture, Durham University, 2007
Boyle Lecture, St Mary-le-Bow, London, 2007
Roscoe Lecture, John Moore's University, Liverpool, 2007.
Gunnar and Gunnel Källén Memorial Lecture, Lund, 2007.
Si-Wei Lectures, National Chengchi University, Taiwan, 2008
Dennis Sciama Memorial Lectures, Oxford and Trieste, 2008
David Phillips Memorial Lecture, Cardiff University, 2008.
Faraday Prize Lecture, The Royal Society, 2009.
Culford Scholars' Lecture, Culford School, 2009
Presidential Lecture, BSA Physics and Astronomy Section, Univ
Surrey, 2009
Tizard Lecture, Westminster School, 2010
William Herschel Lecture, University of Bath, 2010

Van Mildert Trust Lecture, Van Mildert College, University of Durham, 2010
 Marcello Anile Memorial Lectures, University Catania, 2011
 Gregynog Lecture, University of Aberystwyth, 2011.
 Real Sociedad Matemática Española, Centenary Lecture, Paraninfo, Univ. Zaragoza, 2011.
 Zeeman Lecture, London Math. Soc and Inst. Maths. & its Applications, Royal Society, 2012.
 Bernard Lovell Lecture, Jodrell Bank, 2012.
 Presidential Lecture, BSA Mathematics Section, Univ. Aberdeen, 2012.
 Biennial McCrea Astronomy Lecture, Royal Irish Academy, Cork University, 2013.
 Annual Correspondents Day Lecture, Isaac Newton Institute, Cambridge, 2014.
 IMO Celebrity Lecture, International Mathematics Olympiad, U Cape Town, 2014
 Enriques Lecture, Dipt. Matematico, Univ of Milan, 2014

Committees:

In-House Research Panel (APS Board of SERC) 1987-8
 Voting delegate representing the Royal Society and the British Academy, VIII International Congress on Logic, Methodology, and Philosophy of Science, Moscow 1987
 Steering Committee, UK Dark Matter Experiment 1988-9
 Theory and Computation Panel (APS Board of SERC) 1988-92
 Ground-based Programme Committee (APS Board of SERC) 1989-92
 Anglo-German Gravitational Wave Panel (SERC member) 1990
 Lisbon Particle Physics and Cosmology School, Organising Committee, 1990
 International Organising Committee, Texas Symposia on Relativistic Astrophysics 1990-
 Co-chair, Local Organising Committee, Texas/ESO-CERN Symposium on Relativistic Astrophysics, Cosmology and Fundamental Physics, Brighton 1991
 Statistical Challenges in Modern Astronomy, Penn State 1991, Programme Committee
 Brioni Conference on States of Matter in the Universe, 1991, Organising Committee
 International Organising Committee, Texas Symposium in Relativistic Astrophysics 1991-
 Gravitational Radiation Review Panel, (APS Board of SERC) 1994

1996-1998 European Union & Council of Europe SEPS Science Committee

Organising Committee M. Grossmann Meeting, Jerusalem 1997

Porto 1997 Conference Organising Committee, The Non-sleeping Universe,

Board of European Advisors, Templeton Foundation 1995-8, 2000-2004, 2006-9

Board of Trustees, Templeton Foundation, 1999-2005, 2006-12

Board of Trustees, TWC Foundation, 2006-12

Planning Committee, Templeton Foundation, 2005-6

British Council Associate Advisor, 1997-8

Nuffield Foundation Grants Panel, 1998-

Awards Committee, Royal Astronomical Society, 1998-2002

Co-organiser, Newton Institute Cambridge programme, Statistics and Astronomy, August 1999.

Millennium Mathematics Project, Management Committee, 1999-

Millennium Mathematics Committee, Executive Committee, 1999-

Organising Committee Marcel Grossmann Meeting, Rome, 2000

Council of the Royal Astronomical Society, 1999-2002

THES and OUP Science Writing Prize Judge, 1999-2000, 2002-3

Board of Governors, Cheshunt Foundation, 2000-

Board of Continuing Education, Cambridge University, 2001-2

Inst. of Continuing Education, Cambridge, Board member, 2002-4

Finance Committee, Board of Continuing Education, Cambridge University, 2001-2

Finance Committee, Inst. of Continuing Education, Cambridge University, 2002-4

CARET Advisory Board, Cambridge 2002-3

Gruber Cosmology Prize Committee, 2000-3.

Board of Governors, Westminster College, Cambridge, 2001-12

Chair, Audit Committee, Westminster, College, 2008, 2009

International Advisory Committee CosPA, Taiwan, 2002-3

Forum 21, 2002-4

Chair, EPSRC Culture and Creativity Grants Panel, 2004

Advisory Committee, Einstein Centenary Meeting, Paris, 2005.

Audit Committee, Westminster College, Cambridge, 2005-10

Scientific Advisory Board, Foundation Questions in Physics and Cosmology (FQX) Project, 2005-

Editorial Advisory Board, University of Cambridge 800th Anniversary Volume, 2006-8

International Advisory Committee, CosPA International Symposium on Particle Physics & Cosmology, Taipei, 2006.

Patron, Cambridge Science Festival, 2007-9

Cambridge Science Week Patrons Committee, 2007-

Trustee, Van Mildert College Trust, Durham University, 2007-2013

Scientific Advisory Board, World Science Festival, New York, 2008.

Royal Society A-Awards Committee, 2005-8

International Advisory Committee, UNESCO Symposium for International Year of Astronomy, Paris 2009.

Programme Committee, International Conference to Commemorate 400 years of the Telescope, Beijing, Oct 2008.

Cosmology and Philosophy, Oxford 2009, Programme Organising Committee

European Project SCIENAR Board Member 2009-

British Science Association, Physics and Astronomy Section committee, 2008-9

British Science Association, Maths Section committee, 2011-12

European Mathematics Society Committee on Public Awareness of Mathematics, 2008-12

Cambridge University, Mathematics Depts., Senior Promotions Committee, 2010-

Eurasian International Advisory Board, Templeton Foundation, 2011-13

Gresham College Council, Mercers Company and Corp. of London, 2011-12

Gresham College Academic Board, 2007-

OCR/UCLES Mathematics Council, 2011-2

Mathematics Advisory Group to Governor of the Bank of England, 2011-2

Scientific Organising Committee COSMO 2013, Cambridge, 2012-3

Infinites and Cosmology Conference, DAMTP, Cambridge, Chair of Organising Committee, 2013.

Scientific Organising Committee, Texas Symposium in Relativistic Astrophysics, Dallas 2013.

Royal Society Judging Panel, 'Picturing Science' competition, 2013

Editorial Board of *The Universe*, Journal of Asia Pacific Org. for Cosmology and Particle Astrophysics, Taiwan 2014

Cosmology and the Constants of Nature Conference, DAMTP, Cambridge, Chair of Organising Committee, 2014.

Cosmology and Philosophy, Tenerife, Sept 2014, Scientific Programme committee

Telescope Time: J. Kapetyn and Isaac Newton Telescopes, La Palma, (7 nights), 1987.

Anglo-Australian Telescope, (3 nights), April 1998.

- Memberships:** Fellow of the Royal Astronomical Society (FRAS).
Fellow of the Institute of Physics and Chartered Physicist (CPhys
FInstP) 1998
International Astronomical Union, Member of Commission 47
Forum Fellow, World Economic Forum, Davos, Switzerland 1999,
2000
Fellow of the Royal Society of Arts (FRSA), elected 1999.
International Society for Science and Religion (ISSR), elected
2002.
Fellow of the Royal Society of London (FRS), elected 2003.
L'Academie Internationale de Philosophie des Sciences, Titular
Member, elected 2009.
Member of e-LISA Cosmology Working Group, 2014-
- Misc:** John D. Barrow Drama Room named at Cranbrook School, Kent,
2007.
John Barrow Dissertation Prize created at Van Mildert College,
Durham University, 2007.

PUBLICATIONS: JD BARROW

1. Light Elements and the Isotropy of the Universe, 1976. *Mon. Not. Roy. astr. Soc.*, 175, 359-370.
2. The Synthesis of Light Elements in Turbulent Cosmologies, 1977. *Mon. Not. Roy. astr. Soc.*, 178, 625-650.
3. A Chaotic Cosmology, 1977. *Nature*, 267, 117-120.
4. On the Origin of Cosmic Turbulence, 1977. *Mon. Not. Roy. astr. Soc.*, 179, 47P-49P.
5. The Homogeneity and Isotropy of the Universe, 1977. *Mon. Not. Roy. astr. Soc.*, 181, 719-728 (with R A Matzner).
6. Modern Cosmological Models, 1978. *Science Progress* 65, 129-160.
7. Quiescent Cosmology, 1978. *Nature*, 272, 211-215.
8. Primordial Black Hole Formation in an Anisotropic Universe, 1978. *Mon. Not. Roy. astr. Soc.*, 182, 537-558 (with B J Carr).
9. A Cosmological Limit on the Possible Variation of G, 1978. *Mon. Not. Roy. astr. Soc.*, 184, 677-682.
10. Eternity is Unstable, 1978. *Nature*, 276, 453-459 (with F J Tipler).
11. Analysis of the Singularity Studies of Belinskii, Lifshitz and Khalatnikov, 1979. *Phys. Reports*, 56, 371-402 (with F J Tipler).
12. Pre-galactic Black Holes: A New Constraint, 1979. *Gen. Rel. Gravn.*, 11, 633-638 (with J Silk).
13. The Structure of the Early Universe, 1980. *Scientific American*, April issue, pp118-129 (with J Silk).
14. The Early Stages of the Universe, 1980. Chapter 4, Proc. of the General Meeting of the European Physical Society, Inst. of Physics, Heinemann, London.
15. Galaxy Formation: The First Million Years, 1980. *Phil. Trans. Roy. Soc. A*296, 273-288.
16. Black Holes are not the end of the World, 1979. *Phys. Bulletin*, 30, 149-150.
17. Baryon Asymmetry and Cosmological Asymmetries, 1979. *Mon. Not. Roy. astr. Soc.*, 188, 23P-29P.
18. Evolutionary Cosmological Models, 1979. In 'Problems of the Cosmos', (Einstein Centenary Volume, Enciclopedia Italiana, Rome).
19. Shear Hell-Holes and Anisotropic Universes, 1979. *Gen. Rel. Gravn.*, 11, 383-389 (with B J Carr).
20. The Size of a Bouncing Mixmaster Universe, 1980. *Phys. Rev. D* 21, 336-340 (with R A Matzner).

21. The Baryon Asymmetry of the Universe, 1980. *Surveys in High Energy Physics*, 1, 1-30.
22. The Proton Half-life and the Dirac Hypothesis, 1979. *Nature*, 282, 698-9.
23. Primordial Baryon Generation by Black Holes, 1979. *Mon. Not. Roy. astr. Soc.*, 192, 427-439.
24. Cosmological Constraints on the Scale of Grand Unification, 1980. *Nucl. Phys. B*, 181, 461-487 (with G G Ross).
25. Grand Unification Theories and the Dirac Hypothesis, 1980. *Nature*, 287, 566.
26. Cosmological Baryon Annihilation, 1980. *Mon. Not. Roy. astr. Soc.*, 192, 19P-23P.
27. Coagulation with Fragmentation, 1981. *J. Phys. A*, 14, 729-733.
28. Generic Singularity Studies Revisited, 1981. *Phys. Lett. A*, 82, 441-6 (with F J Tipler).
29. Chaos in the Einstein Equations, 1981. *Phys. Rev. Lett.*, 46, 963-967.
30. Baryosynthesis and the Origin of Galaxies, 1981. *Nature*, 291, 469-472 (with M S Turner).
31. Inflation in the Universe, 1981. *Nature*, 292, 35-38 (with M S Turner).
32. The Growth of Anisotropic Structures in a Friedman Universe, 1981. *Astrophys. J.*, 250, 432-449 (with J Silk).
33. Cosmological Constraints on Elementary Particle Masses in Lemaître Cosmological Models, 1981. *Phys. Lett.*, B 107, 358-362.
34. Cosmology and High Energy Physics, 1981. Proc. Inst. of Physics Conference 'Nuclear Structure and Particle Physics', A Hilger, Bristol.
35. The Lore of Large Numbers: Some Historical Background to the Anthropic Principle, 1981. *Quart. Jl. Roy. astr. Soc.*, 22, 388-420.
36. General Relativity and Non-linear Dynamics, 1982. *Gen. Rel. Gravn.*, 14, 1523-1530.
37. Chaotic Behaviour in General Relativity, 1982. *Phys. Reports* 85, 1-49.
38. Cosmology and Particle Physics, 1982. In 'Cosmology: an Oxford Symposium', ed. A Wolfendale, Reidel, Dordrecht, pp21-38.
39. Dissipation and Unification, 1982. *Mon. Not. Roy. astr. Soc.*, 199, 45P-48P.
40. Massive Particles as a Probe of the Early Universe, 1982. *Nucl. Phys. B*, 208, 501-508.
41. Anthropic Definitions, 1983. *Quart. Jl. Roy. astr. Soc.*, 24, 146-153.
42. Natural Units before Planck, 1983. *Quart. Jl. Roy. astr. Soc.*, 24, 24-26.
43. Neutrino Proliferation, 1983. *Phys. Lett. B*, 125, 377-378.
44. Cosmology and Elementary Particles, 1983. *Fund. Cosmic Physics*, 8, 83-200.

45. Perturbations of a De Sitter Universe, 1983. In 'The Very Early Universe', ed. G Gibbons, S W Hawking and S T C Siklos, Cambridge University Press, Cambridge, pp267-272.
46. Chaos in the Mixmaster Universe, 1983. *Phys. Rev. Lett.*, 50, 134-137 (with D. Chernoff).
47. The Stability of General Relativistic Cosmological Theory, 1983. *J. Phys. A*, 16, 2757-2776 (with A. C. Ottewill).
48. Limits on the Neutrino Number and Baryon Density of a Realistic Universe, 1983. *Mon. Not. Roy. astr. Soc.*, 203, 393-401 (with J Morgan).
49. Monopoles in the Milky Way, 1983. *Phys. Lett. B*, 122, 31-32 (with J Stein Schabes).
50. The Isotropy of the Universe, 1982. *Quart. Jl. Roy. astr. Soc.*, 23, 344-357.
51. Structure of the Cosmic Microwave Background, 1983. *Nature*, 305, 397-402 (with R Juszkiewicz and D H Sonoda).
52. Dimensionality, 1983. *Phil. Trans. Roy. Soc. A*, 310, 337-346.
53. Cosmology, Elementary Particles, and the Regularity of the Universe. In 'Relativistic Astrophysics and Cosmology', 1984. eds. X Fustero and E Verdaguer, World Publ. Singapore pp137-199.
54. Non-linear Gravitational Clustering, 1984. *Mon. Not. Roy. astr. Soc.*, 209, 19-144 (withR Juszkiewicz and D H Sonoda).
55. Percolation Analyses of Observed and Simulated Galaxy Clustering, 1983. *Mon. Not. Roy. astr. Soc.*, 205, 61P-66P (with S P Bhavsar).
56. Inhomogeneous Cosmologies with Cosmological Constant, 1984. *Phys. Lett. A*, 103, 315-318 (with J Stein Schabes).
57. Percolation Studies of Galaxy Clustering, 1984. In 'Clusters and Groups of Galaxies', eds. M Mardirossian, G Giuricin, and M Mezetti, Reidel, Dordrecht (with S P Bhavsar), pp 415-421.
58. New Light on Heavy Light, 1984. *Nature*, 307, 14-15 (with R Burman).
59. Microwave Sky Patterns and the Density of the Universe, 1984. In Proc. 1st ESO-CERN Symposium, ed. G Setti and L van Hove, CERN, Geneva (with R Juszkiewicz and D H Sonoda) pp170-176.
60. Chaotic Behaviour and the Einstein Equations, 1984. In 'Classical General Relativity', eds. W Bonnor, J Islam and M A H MacCallum, CUP, Cambridge pp 25-41.
61. A Bootstrap Resampling Analysis of Galaxy Clustering, 1984. *Mon. Not. Roy. astr. Soc.*, 210, 19P-23P, (with S P Bhavsar and D H Sonoda).
62. The Invisible Universe, 1984. *New Scientist*, August 30, p 28-31 (with J Silk).
63. From Quark to Cosmos, 1984. *Nature*, 308, 13-14 (with J Silk).
64. The Stability of Certain Spatially Homogeneous Cosmological Models, 1985. *Gen. Rel. Gravn.*, 17, 409-416 (with D H Sonoda).

65. Helium Formation in Cosmologies with Anisotropic Curvature, 1984. *Mon. Not. Roy. astr. Soc.*, 211, 221-227.
66. Cosmology, the Existence of Observers and Ensembles of Possible Universes, 1985. In 'Les Voies de la Connaissance', ed. M Cazenave, A Michel, Paris.
67. First-Ranked Galaxies in Groups and Clusters, 1985. *Mon. Not. Roy. astr. Soc.*, 213, 857-869 (with S P Bhavsar).
68. Universal Rotation: How Large Can it be?, 1985. *Mon. Not. Roy. astr. Soc.*, 213, 917-943 (with R Juszkiewicz and D H Sonoda).
69. Closed Universes: Their Evolution and Final State, 1985. *Mon. Not. Roy. astr. Soc.*, 216, 395-402 (with F J Tipler).
70. Microwave Background Spottiness, 1985. *Nature*, 316, 48 (with R Juszkiewicz and D H Sonoda).
71. The Asymptotic Behaviour of Bianchi Universes, 1986. *Phys. Reports*, 139, 1-49 (with D H Sonoda).
72. The Limits of Observational Cosmology, 1985. *Observatory*, 105, 120.
73. Minimal Spanning Trees, Filaments and Galaxy Clustering, 1985. *Mon. Not. Roy. astr. Soc.*, 216, 17-35 (with S P Bhavsar and D H Sonoda).
74. Kaluza-Klein Mixmaster Universes, 1985. *Phys. Rev. D* 32, 1595-8 (with J Stein-Schabes).
75. The Stability of Kaluza-Klein Cosmologies, 1986. *Phys. Lett. B*, 167, 173-177 (with J Stein-Schabes).
76. General Relativistic Cosmological Models and the Cosmic Microwave Background, 1986. *Canadian J. Phys.*, 64, 152-159.
77. Alignments of Clustered Quasars, 1985. *Mon. Not. Roy. astr. Soc.*, 218, 587-592 (with K Subramanian).
78. The Left Hand of Creation: the origin and evolution of the expanding universe, (with J Silk), Basic Books, New York, pp 256.
79. Three-Dimensional Classical Space-Times, 1985. *Classical & Quantum Gravity*, 3, 551- 567 (with A Burd and D Lancaster).
80. The Inflationary Universe -- Birth, Death, and Transfiguration, 1982. *Nature* 298, 801-5 (with M S Turner)
81. Observational Limits on the Time-Evolution of Extra Spatial Dimensions, 1987. *Phys. Rev. D*, 35, 1805-1810.
82. Filaments: What the Astronomer's Eye Tells the Astronomer's Brain, 1987. *Quart. Jl. Roy. Astr. Soc.*, 28, 109-128 (with S P Bhavsar).
83. Chaotic Space-times, 1987. In 'The Physics of Phase Space', Proc. 1st International Conference on Phase Space, pp 18-21, eds. A Zachary & S Kim, Springer LNP Series no. 278, Springer, NY.

84. The Closed-Universe Recollapse Conjecture, 1986. *Mon. Not. Roy. astr. Soc.*, 223, 835- 844 (with G J Galloway & F J Tipler).
85. Uncertainties in the Cluster-Cluster Correlation Function, 1986. *Mon. Not. Roy. astr. Soc.*, 223, P21-P27 (with E N Ling & C Frenk).
86. Topics in Relativistic Cosmology, 1987. Cargèse Lectures in Physics, pp 239-292, eds. B Carter & J Hartle, Plenum, NY.
87. Relativistic Cosmology, 1987. Vancouver Lectures. In 'The Early Universe', pp125-202, eds. W Unruh & G Semanoff, Plenum, NY.
88. The Deflationary Universe: An Instability of the De Sitter Universe, 1986. *Phys. Lett. B*, 180, 335-339.
89. The Homogenisation and Isotropisation of an Inflationary Cosmological Model, 1986. *Phys. Lett. B*, 182, 25-27 (with O Gron).
90. Deflationary Universes with Quadratic Lagrangians, 1987. *Phys. Lett. B*, 183, 285-289.
91. Filaments and Cells -- Reality of Illusions?. *Bull. Amer. Astronomical Soc.* Abstracts of 169th Meeting (with S P Bhavsar). 1987
92. The Inflationary Universe: Modern Developments, 1988. *Quart. Jl. Roy. astr. Soc.*, 29, 101-117.
93. Inflation and No-hair Theorems, 1987. Proc. Paris-Meudon Colloquium -- String Theory, Quantum Cosmology and Quantum Gravity, pp 42-53, eds. H de Vega & N Sanchez , World Scientific, Singapore.
94. Cosmic No-hair Theorems and Inflation, 1987. *Phys. Lett. B*, 187, 12-16.
95. Non-gaussian Statistics and the Microwave Background Radiation, 1987. *Mon. Not. Roy. astr. Soc.*, 228, 407-426 (with P Coles).
96. Life, the Universe and the Anthropic Principle, 1987. *The World and I*, 2, 179-187.
97. The Premature Recollapse Problem in Closed Inflationary Universes, 1988. *Nucl. Phys. B*, 296, 697-709.
98. The Confrontation of No-scale Supergravity with Cosmology, 1988. *Nucl. Phys. B*, 298, 733-747 (with N Deruelle).
99. Chairman's Introduction to Royal Society Discussion meeting on the Material Content of the Universe, 1986. *Phil. Trans. Roy. Soc. A*, 320, 433-34.
100. Introduction to Relativistic Cosmology, 1987. In 'Proc. of the 1st CERN-ESO School on Astroparticle Physics, Erice, pp 487-571, ed. A De Rujula, World Scientific, Singapore.
101. The Inflationary Universe, 1988. In 'Interactions and Structures in Nuclei', pp 135-150, eds. R Blin Stoye & W D Hamilton, Adam Hilger, Bristol.
102. Action in the Universe, 1988. *Nature*, 331, 31-34 (with F J Tipler).
103. Lensing of Supernova Neutrinos?, 1987. *Nature*, 327, 375 (with K Subramanian).

104. Inflationary Universes with Exponential Potentials, 1988. *Nucl. Phys. B*, 308, 929-945 (with A Burd).
105. String-driven Inflationary and Deflationary Universes, 1988. *Nucl. Phys. B*, 310, 743-763.
106. The Mysterious Lore of Large Numbers, 1988. Contributed chapter of 'Modern Cosmology in Retrospect', ed. B Bertotti, R Balbinot, S Bergia & A Messina, CUP, Cambridge, pp 67-92.
107. Cosmology Limits the Number of Neutrinos, 1989. *New Scientist* 28th October, p 30 (with N Dombey)
108. Inflation and the Conformal Structure of Higher-order Gravity Theories, 1988. *Phys. Lett. B*, 214, 515-518 (with S Cotsakis).
109. No New Kasner Solution in Higher-Derivative Gravity, 1989. *Mod. Phys. Lett. A*, 4, 519.
110. The New Cosmology, 1988. *Beshara* 6, 19-25.
111. Constants of Physics and the Structure of the Universe, 1988. In 'Unites de Mesure et Constantes Physiques', 30th Saas Fee Lectures, Chapter 8, pp 1-29, eds. M Batato *et al.*, Assoc. Vaudoise, Lausanne.
112. What is the Principal Evidence for the Cosmological Principle?, 1989. *Quart. J. Roy. astr. Soc.*, 30, 163-167.
113. Newtonian No-hair Theorems, 1989. *Class. Quantum Gravity*, 6, 1253-1265 (with G Götz)
114. The Mathematical Universe, 1989. *World & I*, May, pp306-311.
115. Mixmaster Cosmological Model in Theories of Gravity with a Quadratic Lagrangian, 1989. *Phys. Rev. D*, 39, 2187-92 (with H Sirousse-Zia).
116. Microwave Background Constraints on the Voronoi Model of Large-scale Structure, 1990. *Mon. Not. Roy. astr. Soc.*, 244, 557-562 (with P Coles).
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B22 The Book of Universes, Feb. 2011. Bodley Head, Random House and Norton USA, pp. 354.

B23 One Hundred Essential Things You Didn't Know You Didn't Know About Sport, March 2012, Bodley Head, Random House and Mathletics, W. Norton USA, June 2012.

B24 Mathletics, June 2013. Vintage Random House and W. Norton, NY. Paperback edns.

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A1 The Origin of the Universe, (3.5 hours reading by JD Barrow) Orion Audio Books, London, 1997

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ART PROJECTS

P1 Connections in Space. 2006. CD Rom on mathematical and artistic aspects of space, with R. Bright, M. Kemp and N. Mee (online version at <http://www.btinternet.com/~connectionsinspace/index.html>)

P2 Venice Biennale, 2003. Materials contributed to Katie Holten's Laboratorio della Vigna exhibit representing Ireland (www.IrelandattheVeniceBiennale.ie).

THEATRE SCRIPT

T1 'Infinities'. Performed in Italian at the Teatro Piccolo, Milan, directed by Luca Ronconi, 8-28th March 2002 and 5 May-2nd June 2003. Performed in Spanish at Nave de Sagunto, Valencia, directed by Vincente Genovès, 19th April-12 May 2002. Winner of the Italian 2002 Premi Ubu award for best play (Spettacolo dell'anno) and 2003 Italgas Prize for scientific contributions to Italian culture.

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N2 How do archers shoot straight when the laws of physics state they should always miss? It's Not Rocket Science Daily Telegraph Olympic London 2012, July 30, p. S38

N3 Understanding how to beat the drag factor can help break records in the swimming pool. It's Not Rocket Science Daily Telegraph Olympic London 2012, July 31, 2012, p. S38

N4 Why do Olympic organisers insist on turning the heat up in the velodrome? It's Not Rocket Science Daily Telegraph Olympic London 2012, Aug. 1, 2012, p. S38

N5 Why can the seating pattern in a rowing boat be so crucial in the pursuit of gold? It's Not Rocket Science Daily Telegraph Olympic London 2012, Aug 2, 2012, p. S38

N6 How heptathlon's scoring system has helped lift Jessica Ennis' medal chances, It's Not Rocket Science Daily Telegraph Olympic London 2012, Aug. 3, 2012, p. S38

- N7 Why just running fast is not enough for Usain Bolt to break the world record in the 100m. It's Not Rocket Science Daily Telegraph Olympic London 2012, Aug. 4, 2012, p. S38
- N8 Is there an advantage gained from being right- or left-handed in racket sports? It's Not Rocket Science Daily Telegraph Olympic London 2012, Aug. 6, 2012, p. S38
- N9 Why is the Fosbury Flop the best way for high jumpers to clear the bar at Olympics? It's Not Rocket Science Daily Telegraph Olympic London 2012, Aug. 7, 2012, p. S38
- N10 Does having more people on board your canoe necessarily make it much faster? It's Not Rocket Science Daily Telegraph Olympic London 2012, Aug 8, 2012, p. S38
- N11 How do divers pull off the twists which propel them to Olympic gold medals? It's Not Rocket Science Daily Telegraph Olympic London 2012. Aug. 9, 2012 p. S38
- N12 Why do basketball players seem to hang in the air when they are slam-dunking? It's Not Rocket Science Daily Telegraph Olympic London 2012, Aug. 10, 2012, p.S38
- N13 How do footballers achieve the swerve that has goalkeepers grasping at thin air? It's Not Rocket Science Daily Telegraph Olympic London 2012, Aug. 11, 2012, p. S37
- N14 Dove Sono Tutti? La Repubblica 25 Jan 2013, R2 Cultura, p.43
- N15 Radio Star La Repubblica 9 April 2013, R2 Cultura, p.55
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- W3. Mathematics and Sports, http://motivate.maths.org/conferences/conf23/c23_preview.shtml
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- W5. Outer space- A Sense of Balance, <http://plus.maths.org/issue25/editorial/index.html#john>
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REVIEWS

I have also written a large number reviews of books or other pieces of journalism for newspapers, magazines and journals in many languages. These are not listed here. Some were collected and published as the book (B11 above) *Between Inner Space and Outer Space*, 1999. Oxford U.P., Pp. 274.