CURRICULUM VITAE
John Colin WOOD

Personal details

Affiliation   School of Mathematics, University of Leeds, Leeds LS2 9JT, G.B.
Nationality   British
Date of Birth 14 March, 1949

University Education

1967–70   Open Scholarship in Mathematics, Wadham College, University of Oxford
1970–73   Research Student in Mathematics, University of Warwick

Qualifications

1970   B.A. (Hons) First Class (Oxford) in Mathematics
1971   M.Sc. with distinction (Warwick) in Mathematics
1974   Ph.D. (Warwick) in Mathematics

Positions

1973–1977   Lecturer in Mathematics, Brighton Polytechnic (now University of Brighton)
1977–1989   Lecturer in Mathematics, University of Leeds
1989–1997   Reader in Differential Geometry, University of Leeds
1997–2024   Professor of Differential Geometry, University of Leeds
2024–   Emeritus Professor of Differential Geometry, University of Leeds
2003–06   Head of Department, Pure Mathematics, University of Leeds

Visiting positions

1 Sept. **1980**–31 Aug. **1981**   *Gastprofessor*, Sonderforschungsbereich (special research area) *Theoretisch Mathematik* (now Max Planck Institut), Universität Bonn.
1 Sept. **1990**–30 Nov. **1990**   *Chercheur associé*, Ecole Polytechnique, Palaiseau, France.
1 Sept. **1990**–8 Aug. **1991**   *Visitor*, Institut des Hautes Etudes Scientifiques, Bures-Sur-Yvette, France.
15 Feb. **1991**–14 Aug. **1991**   *Professeur invité*, Université de Paris-Sud, Orsay, France (gave two courses, one at undergraduate level and one for the post MSc course *Diplome d'Études Approfondies*, both in French).
1 Dec. **2007**–31 July **2008**   *Gulbenkian Professor*, University of Lisbon, Portugal.

Principal invitations

1976   Principal lecturer, *Summer Course in Complex Analysis*, International Centre
        for Theoretical Physics, Trieste, Italy.

1979   Invited speaker, *Topology*, Oberwolfach, Germany.

1980   Principal lecturer, *Summer Seminar on Complex Analysis*, International Centre
        for Theoretical Physics, Trieste, Italy.

1981   Invited speaker, *Contact Group in Differential Geometry*, Leuven, Belgium.

        Invited speaker, *Invariant Metrics, Harmonic Mappings and Related Topics*, Rome,
        Italy.

1982   Invited speaker, *London Mathematical Society Symposium on Global Riemannian
        Geometry*, Durham, G.B.

1983   Invited speaker, *British Mathematical Colloquium*, Aberdeen, G.B.

        Invited by the Scuola Normale Superiore, Pisa, to give a 20 lecture course on
        Differential Geometry, Cortona, Italy.

1984   Invited follow-up course entitled *Harmonic Maps and Differential Geometry*,
        Trento, Italy.

        Invited speaker, *American Mathematical Society joint summer research conference
        on Complex Differential Geometry and Nonlinear Differential Equations*,
        Bowdoin, U.S.A.

        Invited speaker, *Fifth International Colloquium on Differential Geometry*,
        Santiago de Compostella, Spain.

1985   Principal lecturer, *Sixth International Symposium on Differential Geometry
        and Differential Equations*, Shanghai, China.

        Invited speaker, *Nordic Summer School*, Lyngby, Denmark.

1986   Invited speaker, *Applications harmoniques*, Luminy, France.

        Invited speaker, *Workshop on Global Differential Geometry*, International Centre for
        Theoretical Physics, Trieste, Italy.

1987   Invited speaker, *Skyrmion Workshop*, Cambridge, G.B.

        Invited to give another 20 lecture course on *Minimal Submanifolds and Harmonic Maps*,
        Cortona, Italy.

1988   Invited speaker, *Workshop on Harmonic Maps and Minimal Surfaces*,
        Mathematical Sciences Research Institute, Berkeley, U.S.A.

        Invited to give a short course on *Harmonic Maps* (in Italian) at the University of Bari,
        Italy.

        Invited speaker, Workshop on *Twistor Geometry and Related Topics*, Cortona, Italy.

1989   Invited speaker, *London Mathematical Society Symposium on Geometry of Low
        Dimensional Manifolds*, Durham, G.B.

        27 November–1 December, Invited speaker, *College on Differential Geometry*,
        International Centre for Theoretical Physics, Trieste, Italy.

1990   9–11 April, Invited speaker, *Workshop on Global Analysis*, University of Warwick, G.B.

1991   4–11 September, Invited speaker, *Workshop on Minimal Surfaces*, Granada, Spain.

1992   30 March–5 April, Invited speaker, *Workshop on Geometry and Differential Equations*,
        University of Warwick, G.B.

        20–25 September, Invited speaker, *Workshop on Symplectic Topology and Related Topics*,
        Cortona, Italy.

22 October–4 November, Invited speaker, *Lobachevskii Semester*,
Euler International Mathematical Institute, St. Petersburg, Russia.

1993 12–23 July, Invited speaker, *First International Research Institute of the Mathematical Society of Japan: Geometry and Global Analysis*, Tohoku University, Sendai, Japan.

17–19 November, Invited speaker, *Belgian Contact Group in Differential Geometry*, Han-Sur-Lesse, Belgium.

1994 July, *Professeur invité* for 1 month, Université de Bretagne Occidentale, Brest.

1995 July, *Professeur invité* for 1 month, Université de Bretagne Occidentale, Brest.

1996 March–April, *Professeur invité* for 1 month, Université de Bretagne Occidentale, Brest.

17–21 June, Invited speaker, *Interplays between Geometry and Topology*, International Centre for Mathematical Sciences, Edinburgh.

1–6 July, Invited plenary speaker, *First Brazilian–USA Workshop on Geometry, Topology and Physics*, Campinas, Brazil.

8–12 July, Invited speaker, *International Conference on Differential Geometry*, Instituto de Matematica Pura e Aplicada, Rio de Janiero, Brazil.

1997 17–21 March, Invited to give *A Short Course on Harmonic Morphisms*, University of Bucharest, Romania.

April, *Professeur invité* for 1 month, Université de Bretagne Occidentale, Brest.

May–June, *Professeur invité* for 1 month, Université Libre de Bruxelles, Belgium.

27–29 August, Invited speaker, *Complex Methods in Differential Geometry*, International Centre for Mathematical Sciences, Edinburgh.

1998 28 March–3 April, Invited to give a follow-up short course on harmonic morphisms, University of Bucharest, Romania.

July, *Professeur invité* for 1 month, Université de Bretagne Occidentale, Brest.

1999 July, *Professeur invité* for 1 month, Université de Bretagne Occidentale, Brest.

16–22 Sept, Main speaker, *Fourth International Workshop on Differential Geometry and its Applications*, Braşov, Romania.

2000 17–21 February, Main speaker, *Winter School on Differential Geometry*, Keio University Conference Centre, Bury St. Edmunds, G.B.

1–5 February, Main speaker, *Workshop on Harmonic Maps and Minimal Immersions*, Caparide, Portugal.

May–June, *Professeur invité* for 1 month, Université Libre de Bruxelles, Belgium.

June–July, *Professeur invité* for 1 month, Université de Bretagne Occidentale, Brest.

17–21 July, Main speaker, *Integrable systems in differential geometry*, Tokyo Metropolitan University, Japan.

2001 28 May–1 June, Opening speaker, *Harmonic morphisms and harmonic maps*, Centre International de Rencontres Mathématiques, Luminy, France.

30 July–9 August, Invited speaker, *Special structures in differential geometry*, London Mathematical Society Durham Symposium.

2002 10–11 September, Invited colloquium and seminar, University of Lund, Sweden.

2003 April, *Professeur invité* for 1 month, Université Libre de Bruxelles, Belgium.

July, *Professeur invité* for 1 month, Université de Bretagne Occidentale, Brest.

2004 15–17 April, Invited speaker, *International Workshop on Global Analysis*, Çankaya University, Ankara, Turkey.

13–15 May, Invited special session speaker, *Joint meeting of the American and Mexican Mathematical Societies*, University of Houston, Texas, USA.

30 August–3 September, Invited speaker, *International conference on differential geometry and its applications*, Charles University, Prague, Czech Republic.

2005 8–12 January, Invited main speaker, *UK–Japan Winter School*, Evesham, G.B.

4–7 April, Invited 'morning speaker', *British Mathematical Colloquium*, University of Liverpool, G.B.

29–31 August, Invited plenary speaker, *5th conference of the Balkan Society of Geometers*, Mangalia, Romania.

31 August–2 September, Invited sectional speaker, *Differential Geometry and Physics*, Eötvös Loránd University, Budapest, Hungary.

5–11 September, Invited plenary speaker, *Seventh International Conference on Differential Geometry and its Applications*, Deva, Romania.

14–17 September, Invited plenary speaker, *Symmetry in geometry and physics. In Honour of Dmitri Alekseevsky*, University of Rome 1, Italy.

2006 11–21 August, Invited participant, *London Mathematical Society Durham Symposium: Methods of Integrable Systems in Geometry*, University of Durham.

21 August–1 September, Invited visitor, University of Lund, Sweden.

11–16 September, Invited speaker, *XV International Workshop on Geometry and Physics*, Puerto de la Cruz, Tenerife, Canary Islands.

2007 24–25 May, Invited plenary speaker, *Irish Geometry Conference*, National University of Ireland, Galway.

15–28 July, Invited visitor, University of Campinas, Brazil.

29 July–3 August, Invited speaker, *26º Colóquio Brasileiro de Matemática*, IMPA, Rio de Janeiro, Brazil.

16–23 September, Invited visitor, University of Southern Denmark, Odense.

2008 27 June, Invited speaker, *Geometry Day in Memory of A. Sanini*, Università di Torino, Italy.

30 June–5 July, Main speaker, *Conformal Geometry*, CNRS, Roscoff, France.

1 Sept.–31 Oct. Invited visitor, University of Southern Denmark, Odense.

1 Nov.–13 Dec. Invited visitor, Università di Cagliari, Italy.

15–20 December, Main speaker, *The 16th Osaka City University International Academic Symposium "Riemann Surfaces, Harmonic Maps and Visualization"* Osaka City University, Japan.

2009 27 June–11 July, Invited visitor, Université de Bretagne Occidentale, Brest, France.

7–10 September, Birthday boy and plenary speaker, *A Harmonic Map Fest in honour of Prof. John C. Wood on the occasion of his 60th birthday*, Università di Cagliari, Italy.

2010 4–14 January, Invited visitor, Mathematics, and invited speaker, *CP3 origins*, University of Southern Denmark, Odense, Denmark.
video of talk at `http://cp3-origins.dk/a/1280`.

20–22 June, Invited speaker, *Durham Conference on Geometry and Topology in Honour of John Bolton and Cherry Kearton*.

1–7 November, Invited speaker, VI International Conference on *Finsler Extensions of Relativity Theory*, Bauman University, Moscow.

19 October, Invited speaker, King's College, University of London.

2011 28 February, Invited seminar, University of Leicester.

2012 3–8 April, Invited speaker, *Differential Geometry*, Będlewo, Poland.

1–7 July, Invited speaker, *Geometric Structures on Manifolds and their Applications*,
Rauischholzhausen, Germany.

6 December, Invited speaker, *Recent Understanding in Harmonic Maps*,
Graduate Center, City University, New York.

2013 27 January–8 February and 19–23 August, Invited visitor, University of Southern
Denmark, Odense

2014 11 February, Invited talk, Universidad Autonoma, Madrid.

31 March–11 April, LMS-funded visit to the University of Lisbon to research with
Bruno Simões and Maria João Ferreira.

14 May, Closing speaker at *Differential Geometry Day*, Lund University, Sweden.

22–27 September, Invited visitor and colloquium speaker, Lund University, Sweden.

2015 26–30 January, Invited visitor, Lund University, Sweden.

10–12 June, Opening speaker, Differential Geometry Workshop, University of Cagliari, Italy.

1–11 September, Invited visitor, University of Lisbon.

23–28 November, Invited visitor and colloquium speaker, Lund University, Sweden.

2016 27 June–1 July, Invited visitor and colloquium speaker,
University of Beira Interior, Covilhã, Portugal.

2–8 July, Invited visitor, University of Lisbon.

7–9 September, Opening speaker, *Quaternionic Differential Geometry
and its Related Topics*, Ochanomizu University, Tokyo, Japan.

2017 30 January–3 February, Invited visitor, Lund University, Sweden.

2019 16–18 September, Invited speaker, *Integrable Systems and Harmonic Maps*,
TU Wien (Vienna University of Technology), Austria.

2022 30 May–3 June, One of two foreign plenary speakers, *Géométrie au bout du monde*,
Trez-Hir, France.

2023 6–9 September, Special Guest and Opening speaker, *Differential Geometry Workshop*,
Iaşi, Romania.

Conferences organized

1992 11–15 May (with A. Fordy) ,
International Workshop on Harmonic Maps and Integrable Systems,
University of Leeds (43 participants from 10 countries).

1994 28 July–1 August (with A. West and S. Carter),
International Workshop on Harmonic Maps and Curvature Properties of Submanifolds,
University of Leeds (over 80 participants from all over the world).

1997 7–11 July, On Scientific Committee for the first international conference on
Harmonic Morphisms, Harmonic Maps and Related Topics,
Université de Bretagne Occidentale, Brest, France.

2000 11–14 April (with S. Carter and J.M. Speight)
International Workshop on Harmonic Maps and Curvature Properties of Submanifolds, 2,
University of Leeds.

2001 28 May–1 June, On scientific Committee for *Harmonic morphisms and harmonic maps*,
Centre International de Rencontres Mathématiques, Luminy, France.

2008 6–13 Jan, On scientific Committee for *Winter School in Geometry and Theoretical
Physics*, University of Southern Denmark, Odense.

25–28 March, Co-organizer, special session on Differential Geometry and Geometric Analysis, *British Mathematical Colloquium*, York.

1977–2007 Organized one or two *Differential Geometry Days* at Leeds every year. These have frequently had speakers from abroad and have attracted participants from all over Britain. These developed into *Yorkshire and Durham Geometry Days*, held in turn in Leeds, York and Durham, attracting funding from the London Mathematical Society.

2017 15–17 May, Member of scientific committee, *Harmonic maps*, Université de Bretagne Occidentale.

2018 12–14 September, Member of scientific committee, *Differential Geometry Workshop*, Università di Cagliari, Italy.

2019 7–10 January, Joint local organizer, *UK-Japan Winter School*, University of Leeds. 27–31 May, Member of scientific committee, *Variational problems and the geometry of submanifolds*, Centre International de Rencontres Mathématiques, Luminy, France.

Principal Research Grants

1989–92 Part of EC Science Plan Twinning arrangement with 12 European Universities.

1993–97 Scientist in charge of Leeds "laboratory" for an EC Human Capital and Mobility network.

1999 LMS grant for conference at Leeds, April 2000: 4000 GBP.

2000 EPSRC research grant, May 2001 for 24 months, 81,387 GBP to employ Research Assistant (Radu Pantilie).

2018 LMS grant for UK-Japan Winter School at Leeds, January 2019: 6550 GBP.

Teaching

I have taught undergraduate courses for Mathematicians and for scientists at all levels, including analysis, algebraic topology and differential geometry and an MSc course on *Infinite dimensional Manifolds*. In 1991, I gave the course on statistics to first year Biology students and a course for the (post Msc) *Diplome d'études approfondies* in Mathematics called *Applications harmoniques entres variétés riemanniennes*, at the Université de Paris-Sud, Orsay, France (both in French). I gave a short course on *Harmonic Maps* at the University of Lisbon in 2008.

Research

My main interests have been in *harmonic maps and morphisms*.

1. *Harmonic maps*

Harmonic maps are mappings between Riemannian manifolds which extremize the energy functional, a natural generalization of the Dirichlet integral. They include *geodesics* (paths of shortest distance such as great circles on a sphere),

minimal surfaces (soap films) and *non-linear sigma models* in the physics of elementary particles. They also have applications to the theory of liquid crystals (see below) and robotics (see, for example [Y-J Dai, M. Shoji, H. Urakawa, *Harmonic maps into Lie groups and homogeneous spaces*, Differential Geom. Appl. 7 (1997), 143–160].

In [5], I proved with J. Eells that *there is no harmonic map from the torus to the sphere of degree one*; this was the first non-existence result for harmonic maps, I proved the first such result in dimension more than two for the Dirichlet problem in [18], then generalized with H. Karcher in [19]. This is of interest in the theory of liquid crystals, see [K.S. Chou and X.P. Zhu, *Some constancy results for nematic liquid crystals and harmonic maps*, Ann. Inst. H. Poincaré — Anal. Non Lineaire, 12 (1995), 99–115], for other applications, see [J.F. Escobar, A. Freire and M. Min-Oo, L^2 *vanishing theorems in positive curvature*, Indiana Univ. Math. J., 42 (1993), 1545–1554] and [J.F. Grotowski, Y. Shen and S. Yan, *On various classes of harmonic maps*, Arch. Math. (Basel), 64 (1995), 353–358].

In [15] following work of Glaser–Stora and Din–Zakrzewski, I gave with Eells the classification of harmonic maps from the 2-sphere to complex projective space; for maps into certain other symmetric spaces, see [16,22,24,25,27,28,31]. These constructions have developed into a *twistor theory*, see F.E. Burstall and J.H. Rawnsley, *Twistor theory for Riemannian symmetric spaces. With applications to harmonic maps of Riemann surfaces.* Lecture Notes in Mathematics, 1424. Springer-Verlag, Berlin, 1990], and into *integrable systems methods* for harmonic maps, see [42]. This is the non-linear sigma-model of elementary particle physics. For some applications, see [G. Dunne, *Chern–Simons solitons, Toda theories and the chiral model*, Comm. Math. Phys., 150 (1992), 519–535], [B. Piette and W.J. Zakrzewski, *Properties of classical solutions of the U(N) chiral sigma-models in two dimensions*, Nuclear Phys. B 300 (1988), 223–237].

In [45] I described with L. Lemaire the space of harmonic 2-spheres in the complex projective plane $\mathbf{C}P^2$ as a smooth submanifold of the space of all C^k maps ($k \geq 2$). It is important to understand the *infinitesimal deformations ('Jacobi fields')* along harmonic maps betwen given Riemannian manifolds M and N, especially the question of whether all Jacobi fields are *integrable*, i.e. do they arise from variations through harmonic maps. An affirmative answer implies that the space of harmonic maps from M to N is a manifold with the Jacobi fields as tangent spaces; the case of harmonic 2-spheres is particularly important as it also has a bearing on the structure of the singular set of such maps from *any* manifold to N. We have just shown [70] that the case of harmonic 2-spheres in S^3 or S^4 is different, with not all Jacobi fields integrable.

More recent work has been to revisit some constructions of harmonic maps from surfaces which were inspired by the seminal work of K. Uhlenbeck [*Harmonic maps into Lie groups: classical solutions of the chiral model*, J. Differential Geom. 30 (1989) 1–50]. In [72], with M.J. Ferreira and B.A Simões, I found completely explicit formulae for the uniton factorization due to G. Segal; in [73], with M. Svensson, I showed how to do that for any uniton factorization and extend the method to harmonic maps into the classical Lie groups and symmetric spaces. In [76], we characterized when a harmonic map into a compact classical

symmetric space has a twistor lift and gave an explicit geometrical construction of that lift; in [77] we extended this work to the exceptional symmetric space G2/SO(4), finding twistor lifts into its three twistor spaces: one of them the quaternionic twistor space. In [78] with M.J. Ferreira and B.A. Simões, I found completely explicit formulae for all harmonic spheres in the orthogonal group; in patricular, this work revealed a correspondence with certain of those maps and the free Weierstrass representation of null curves and minimal surfaces in 3- and 4-space.

In [79], with A. Aleman and R. Pacheco, I found a new criterion for the finiteness of the uniton number. In [80], I studied symmetry conditions on the extended solutions which give harmonic maps into symmetric and k-symmetric spaces, showing how to obtain primitive harmonic maps from certain harmonic maps into the unitary group.

In [81], with Pacheco, I extended many known results for harmonic maps from the 2-sphere into a Grassmannian to harmonic maps of finite uniton number from an arbitrary Riemann surface. The method relies on a new theory of nilpotent cycles in the diagrams for harmonic maps studied with F. Burstall in [22], the theory arising from the criterion in [79].

2. *Harmonic morphisms*

Harmonic morphisms are mappings of Riemannian manifolds which preserve solutions of Laplace's equation; elementary examples are conformal transformations of the complex plane. In stochastic processes, harmonic morphisms are Brownian path-preserving transformations, see, for example [A. Bernard, E.A. Campbell and A.M. Davie, *Brownian motion and generalized analytic and inner functions*, Ann. Inst. Fourier (Grenoble) 29 (1979), 207–228]. Harmonic morphisms can be characterized as harmonic maps which satisfy an additional condition called 'horizontally weakly conformality' or 'semiconformality', which is dual to the condition of weak conformality. I recently completed with P. Baird (Brest) the first account in book form [62] of this subject; this has rapidly become the standard text.

In [26] and [30], Baird and I constructed all harmonic morphisms from S^3, $\mathbf{R}^3$ and H^3 to surfaces; for a re-proof of the $\mathbf{R}^3$ case, which is apparently simpler to probabilists, see [F. Duheille, *Une preuve probabiliste élémentaire d'un résultat de P. Baird et J.C. Wood*, Ann. Inst. H. Poincaré Probab. Statist. 33 (1997), 283–291]. For other 3-manifolds see [32].

In [37] for maps from an Einstein 4-manifold to a surface, I showed that the existence of a harmonic morphism implies the existence of a Hermitian structure and conversely; see [V. Apostolov and P. Gauduchon, *The Riemannian Goldberg-Sachs theorem*, Internat. J. Math. 8 (1997), 421–439] for related work. In the semi-Riemannian case, harmonic morphisms determine *shear-free ray congruences*, of interest in mathematical physics, see [49].

In [*Harmonic morphisms with fibers of dimension one*, Comm. Anal. Geom. 8 (2000), 219–265], R. Bryant showed that there are just two types of harmonic morphism with one-dimensional fibres from a space form of dimension four or more, the second type being induced from Killing fields. In [60], R. Pantilie

and I extended Bryant's result to Einstein manifolds of dimension 5 or more. We gave applications to finding new Einstein metrics in [61]. Work continues to understand harmonic morphisms from self-dual 4-manifolds, where a further type appears [63]. All the new types of harmonic morphisms satisfy a *monopole-type equation*.

In [75], Baird and I unified known some constructions of harmonic morphisms from 3-dimensional Euclidean or pseudo-Euclidean spaces by using the bicomplex numbers. This should help us to see more links between objects of interest to mathematical physicists such as shear-free ray congruences and geometric objects such as Hermitian structures.

Leadership

Whilst Head of Department, I was on the *School of Mathematics Management Committee* (2003–06). Later, I was on the Head of Department's *Pure Mathematics advisory group* as the leader of the Differential Geometry Group.

I was the Pure Mathematics leader for the *Research Assessment Exercise (2008)*, responsible for the final submission in November 2007.

I have been on the following University committees: *Senate* (2003–06), *University Library Consultative Subcommittee* (1985–87), *School of Mathematics Executive Committee* (1991–94), *Examinations Group of the Graduate Board of the University* (2001–03), *Peer Review of Teaching Working Group* (2011–13): together with the Director for Undergraduate Studies, I ran a pilot in Mathematics of the Teaching Enhancement Scheme devised by this committee. For three years I was the *Quality Enhancement Officer* for the School of Mathematics and thus on the *Taught Student Education Committee* and the *Examinations Monitoring Group*.

I have been asked regularly to sit on university appointment and promotion committees, often in other faculties.

Postdoctoral fellows

C.M. Wood (now at the University of York): Postdoctoral Research Fellow, Science and Engineering Research Council (now EPSRC) (1988–90).

P. Baird (now at the Université de Bretagne Occidentale, Brest) Advanced Research Fellowship, Science and Engineering Research Council (1989–93).

M. Svensson (now at the University of Southern Denmark, Odense): Postdoctoral research assistant, Swedish Research Council (2005–06).

Research Students Supervised

1980–1984 S. Erdem, PhD awarded 1984
1984–1988 A. Bahy-El-Dien, PhD awarded 1988
1988–1992 V. Parmar, PhD awarded 1992
1988–1992 S. Gudmundsson, PhD awarded 1992
1989–1992 T. Wheldon (left due to ill health)
1992–1995 M.T. Mustafa, PhD awarded 1995
1992–1996 E. Loubeau, PhD awarded 1996

1993–1997 S. Montaldo, PhD awarded 1997
1997–2000 R. Pantilie, PhD awarded 2000
1998–2002 A. Pambira, PhD awarded 2003
2003–2007 B. Simões, PhD awarded 2008
2015–2019 J. Oliver, PhD awarded 2020

Other activities

External examiner for over 16 PhD theses including being on the jury twice at the Université de Paris-Sud, Orsay, France, twice at the Université de Bretagne Occidentale, Brest, once at Université de François Rabelais, Tours (as President of the Jury), and once at the Università di Cagliari, Italy.

I have been the Pure Mathematics External Examiner for the mathematics degree courses at the following universities:

1998–2002   University of Oxford.
2001–2004   University of York.
2003–2006   University of Durham.
2010–2014   University of Bath.

I was on the editorial board of *Beiträge zur Algebra und Geometrie. Contributions to Algebra and Geometry*.

Referee for many journals and grant awarding bodies, including the EPSRC, the National Science Foundation (USA) and the Hong Kong Research Grants Council.

355 reviews written for *Mathematical Reviews* and several reviews for the London Mathematical Society.

Languages

English (native), French (reasonable), German (could be revived), Italian (comes and goes), Portuguese (improving), Spanish (learning), Mathematical Russian (with difficulty, when the need arises).