Prof. Andrew Curtis   *blogs.ed.ac.uk/curtis*   e. *Andrew.Curtis@ed.ac.uk*
University of Edinburgh   *blogs.ed.ac.uk/imaging*   t. *+44 786 654 6227*

PROFESSIONAL CAREER

2009-Now	**Professor of Mathematical Geoscience** (*University of Edinburgh*)
2017-2019	**Guest Professor, ETH Zurich** (*2 years, half-time*)
2005-2009	**Reader of Exploration Geophysics** *School of GeoSciences, The University of Edinburgh, Scotland*
1997-2005	**Senior Research Scientist** then **Principal Research Scientist** *Schlumberger Cambridge Research, England (Grade A, "Outstanding", 5 years)*
2000-2001	**Global Corporate Business Venturing Champion** *Schlumberger: Architect and Manager of global entrepreneurial venturing unit*
1994-1997	**Postdoctoral Research Fellow** *Dept. of Theoretical Geophysics, The University of Utrecht, The Netherlands.*

ADDITIONAL APPOINTMENTS

2023-Now	**President**, British Geophysical Association (*https://geophysics.org.uk/*)
2023-Now	**Vice President (Geophysics)**, Royal Astronomical Society (*https://www.ras.ac.uk/*)
2010-Now	**Head**, Edinburgh Imaging Project (*https://blogs.ed.ac.uk/imaging/*)
2017-Now	**Active Member**, European Assoc. Geosci. Eng. (EAGE) *Awards Committee*
2007-Now	**Active Member**, Society Exploration Geophysics (SEG) *Research Committee*
2012-2019	**Active Member**, Directorate of Scottish Centre for Carbon Capture & Storage
2011-2013	**Head, Institute of Earth & Planetary Science (35 academics + sub-groups/PhDs)** *Solid-Earth section of the School of GeoSciences, University of Edinburgh*
2006-2006	**Invited Visiting Professorship**, University de Paris, Orsay, France
2001-2004	**Co-Founder and Leader, Schlumberger Mathematics Technical Community** International Professional Society (>1500 members by 2004)
2001	**Co-Founder UK Corporate Innovation & Venturing Society** (15 corporations)

UNIVERSITY EDUCATION

1990-1994:	**D. Phil. in Geophysics** – University of Oxford, England Supervisors: Prof. P. England, FRS; Prof. J.H. Woodhouse, FRS
1986-1990:	**B. Sc. Honours in Mathematics** (*First Class*) – University of Edinburgh, Scotland

RESEARCH BREADTH – ACADEMIC & APPLIED

My research spans several disciplines, applications & professional societies, exploring boundaries of academic and applied science. Developing & mentoring an excellent team of scientists is vital to maintaining breadth:

- **Prize**: Society Expl. Geophysics *2017 Reginald Fessenden Award (Previously Medal)*

- **Ph. D. Student Prizes & Awards**:
  - Dirk-Jan van Manen won *EAGE's 2007 Van Weelden Award* for best thesis, *SEG's 2008 J. Clarence Karcher Award* for best contribution to science, and was runner up in the *Royal Astronomical Society's 2008 Keith Runkorn Ph. D. Thesis Prize*
  - D. Halliday won *EAGE's 2010 Van Weelden Award* for best thesis, *SEG's 2013   J. Clarence Karcher Award*, and *Royal Astron. Soc. 2010 Keith Runkorn Ph. D. Thesis Prize*
  - Matteo Ravasi won the *Royal Astronomical Society's 2015 Keith Runkorn PhD Thesis Prize*, and Italy's *Gustavo Sclocchi PhD thesis prize 2015*
  - Robbert van Vossen & Ueli Meier both passed *Cum Laude* (Top 10% of all Dutch theses)

- 15 previous post-doctoral scientists, 28 previous successful PhD students, 7 current PhD students (5 as primary supervisor), in remotely-sensed imaging, design, risk, subsurface monitoring, expert elicitation, interferometry, and non-destructive testing.

MAIN RESEARCH INTERESTS

Wavefield Interferometry & Imaging: The *Edinburgh Imaging Project* is a £2.7M project developing novel methods and applications. Milestones include foundational papers in seismic interferometry; first elastic Marchenko imaging method and real-data application; first 3D Bayesian Nonlinear Full Waveform Inversion [*48 papers, 3 postdocs, 12 PhD's, 7 international PhD prizes*].

Geoscientific Statistical Experimental Design: creating novel design methods to obtain the most information from the least experimental effort/cost/instrumentation. Particularly dedicated to the design of nonlinear problems – almost all Geophysical problems are nonlinear. Milestones include creating the first nonlinear design research/methods in Geophysics, and a legacy that has recently led to design methods being applied for full industrial seismic surveys [*15 papers, 1 postdoc, 3 PhD's*].

Inverse Theory: Published the first Geophysical Bayesian, nonlinear, probabilistic inversion using neural networks [*3 PhD students, 6 papers*], a method that is now established in Geophysics; first exact-sampling alternative to Markov chain Monte Carlo for 2- or 3-dimensional gridded nonlinear inversion; first non-sampling based method to obtain full posterior pdf's in nonlinear Geophysics using Hidden Markov Models; introduced variational geophysical inversion [*3 PhD students*].

Expert Elicitation Theory & Risk Analysis: Combines Geology, Economics, Psychology, and uncertainty analysis in inference and design problems. Published the first papers on group interaction effects on Geoscientific expert advice and risk analysis. Recently developed the first Bayesian theory that explicitly includes the principal human expert biases, and research questions driving inverse problems independently of any specific parameterisation: this allows human biases to be studied and quantified probabilistically in real Geoscientific problems [*2 postdocs, 8 papers, 1 edited volume*].

KNOWLEDGE TRANSFER

- Code packages, reports & training released annually to academia & industry from research group
- Our research fed into WesternGeco's revolutionary Over-Under Recording technology for seismic imaging – the first outsourcing of strategic research by that company (2007-10)
- Survey design methods transferred to Total: postdoc Knowledge Transfer Partnership (2007-10)
- Ph. D. students feed research directly into industrial partners R&D through extended visits
- Many articles in international trade journals

In Schlumberger plc.:   Created global corporate venturing unit for which $50M was reserved.

PRINCIPAL RESEARCH GRANTS

At University of Edinburgh: to-date, **£7.7M**. Examples:

PI, Edinburgh Interferometry Project, Multiple industrial sponsors	£3.7M
Co-PI, EPSRC project on non-destructive testing (PI Mulholland)	£630K
PI, EU Innovative Training Network SPIN (€3.8M total; €505K to Edinburgh)	£400K
PI, industrially sponsored postdoc and PhD on Geological Prior Information	£400K
PI, industrially sponsored postdoc on seismic processing	£315K
Co-PI CO_2 Storage project (£2.2M total; 2xPDRA's = £460K to me)	£460K
PI, Knowledge Transfer Partnership, experimental design	£180K
PI, 5 NERC Industrial/Open CASE Ph. D.'s + Industrial Costs	£382K
PI, WesternGeco Undergraduate Scholarships	£30K

PATENTS & PUBLICATIONS

- >10 Patents granted
- >150 Publications in peer-reviewed, academic journals

➔ **ALL PUBLICATIONS ARE LISTED AT: www.blogs.ed.ac.uk/curtis**