

# CURRICULUM VITAE

## Personal Data

Name: René de Borst

Date of Birth: 22 February 1958

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[r.deborst@sheffield.ac.uk](mailto:r.deborst@sheffield.ac.uk) (professional)

Nationality: Dutch

## Education

August 1970 - June 1976: Gymnasium- $\beta$ , Stevin College, The Hague.

August 1976 – June 1982: Studies at the Department of Civil Engineering, Delft University of Technology. The subject of the graduation thesis was numerical methods for non-linear soil behaviour. For the thesis and excellent results during the entire study the degree was awarded with distinction (cum laude).

June 1979 - August 1979: Studies at the University of Minnesota, Department of Civil and Mineral Engineering. Research on analytical modelling of groundwater flow.

April 1986: Degree of Doctor in the Technical Sciences awarded at Delft University of Technology for the dissertation "Non-linear analysis of frictional materials". The degree was awarded with distinction (cum laude).

## Professional Experience

August 1982 – September 1993: Research & Development engineer at Building and Construction Research, the Netherlands Organization for Applied Scientific Research (TNO).

May 1988 – September 1993: Part-time Professor of Computational Mechanics at the Faculty of Civil Engineering, Delft University of Technology.

September 1993 - December 1998: Professor of Computational Mechanics at the Faculty of Civil Engineering, Delft University of Technology.

September 1993 – August 1998: Part-time Professor of Damage Mechanics at the Faculty of Mechanical Engineering, Eindhoven University of Technology.

August 1997 – April 2007: Scientific Director of the Koiter Institute Delft.

January 1999 – April 2007: Professor of Engineering Mechanics at the Faculty of Aerospace Engineering, Delft University of Technology.

August 1999 – July 2001: Chairman of the Division of Dynamics and Simulation of the Faculty of Aerospace Engineering, Delft University of Technology

November 2003 - October 2005: Chairman of the Division of Mechanics, Aerospace Structures and Materials of the Faculty of Aerospace Engineering, Delft University of Technology

April 2004 – April 2007: Vice-Dean of the Faculty of Aerospace Engineering, Delft University of Technology

May 2007 - 2012: Professor of Numerical Methods in Engineering at the Faculty of Mechanical Engineering, Eindhoven University of Technology.

April 2007 – May 2011: Dean of the Faculty of Mechanical Engineering, Eindhoven University of Technology

April 2010 – May 2011: Founding Director of the Eindhoven Energy Institute (EEI), which covers one of the three strategic research areas of Eindhoven University of Technology

January 2012 – December 2015: Regius Professor of Civil Engineering and Mechanics, University of Glasgow (chair founded by Queen Victoria in 1840).

January 2016 – present: The Centenary Professor of Civil Engineering (inaugural holder), Department of Civil and Structural Engineering, University of Sheffield.

### **Administrative Academic Duties**

- September 1993 - June 1998: Chair, Examinations Committee of the Faculty of Civil Engineering, Delft University of Technology
- August 1997 - April 2007: Coordinator of the basic mechanics education at Delft University of Technology
- March 1998 - March 2001: Member of Delft university-wide Budget Allocations Committee
- January 2000 – June 2007: Scientific Director of the Dutch national Graduate School Engineering Mechanics
- November 2000 - December 2002: Member of TU Delft Council of Professors
- April 2001 - March 2002: Member of TU Delft Portfolio research committee
- January 2005 – December 2008: Scientific Director of the Dutch-French Network on Higher Education and Research and Member of the French-Dutch Cooperation Council
- July 2007 – April 2012: Chair, Board of the Dutch national Graduate School Engineering Mechanics

- September 2008 – January 2011: Member of the Panel on New Members of the Royal Netherlands Academy of Sciences
- September 2011 – April 2017: Chair, Panel on New Members in Natural and Engineering Sciences of the Royal Netherlands Academy of Sciences
- March 2015 – September 2015: Chairman of the Panel “Engineering” of the Netherlands National Science Agenda (Nationale Wetenschaps Agenda).
- 2017 – 2021: Member Royal Academy of Engineering / Leverhulme Trust panel for Senior Research Fellowships.
- 2017 – 2019: Chair, Panel on Mechanics, Materials and Mechatronics, Danish Independent Research Fund.
- 2017 – 2020: Chair, Division of Natural and Engineering Sciences of the Royal Netherlands Academy of Sciences
- 2018 – 2021: Member Panel New Members for Civil & Environmental Engineering, Royal Academy of Engineering (London)
- 2018 – 2023: Member Royal Society International Exchanges Committee (London).

### **Visiting Professorships**

- August 1986 – March 1987: Visiting Professor of Mechanical Engineering, The University of New Mexico, Albuquerque, USA.
- November 1992: Visiting Professor at the Institut für Statik und Dynamik der Luft- und Raumfahrtkonstruktionen, Universität Stuttgart, Germany.
- May - June 1993: Visiting Professor at the Laboratoire de Mécanique et Technologie, Ecole Normale Supérieure de Cachan, France.
- May 1994: Visiting Professor at the Institute for Structural Engineering, Politecnico di Milano, Italy.
- September – December 1995: Visiting Professor at the Laboratoire de Mécanique et Technologie, Ecole Normale Supérieure de Cachan, France.
- July 1997: Visiting Professor at the Universitat Politècnica de Catalunya, Barcelona, Spain.
- October 1997: Visiting Professor at the College of Industrial Engineering, Nihon University, Chiba, Japan.
- July 1998: Visiting Professor at the Institut Supérieur de Génie Mécanique et Productique, Université de Metz, France.

- June 1999: Visiting Professor at the Institut Supérieur de Génie Mécanique et Productique, Université de Metz, France.
- July 1999: Visiting Professor at the Institut National des Sciences Appliquées de Lyon, France.
- February – May 2004: Visiting Professor at the Institut National des Sciences Appliquées de Lyon, France.
- September 2004 – September 2007: Directeur de Recherche à Temps Partiel Associé au Centre National des Recherche Scientifique (Poste Rouge)
- September 2006: Marie-Curie Distinguished Researcher, Lublin, Poland.
- June – July 2014: John Argyris Visiting Professor, Excellence Cluster for Simulation Technology, University of Stuttgart, Germany
- October – November 2014: MTS Visiting Professor of Geomechanics, The University of Minnesota, Minneapolis, USA

### **Consultancy**

- October 1993 – September 1995: TNO Building and Construction Research
- December 2015 – June 2016: Dutch Safety Board
- 2013 – 2017: Dassault Aviation, Paris.

### **Fellowships / Honorary Memberships of Professional Organisations**

- 2002: Fellow, International Association for Computational Mechanics (IACM)
- 2010: Fellow, International Association for Fracture Mechanics of Concrete and Concrete Structures (IA-FraMCos)
- 2012: Fellow, the Institution of Civil Engineers (ICE)
- 2019: Honorary Member, Italian Group on Fracture (IGF)

### **Fellow/memberships of Academies**

- 1994: Member, "Bataafsch Genootschap voor Proefondervindelijke Wijsbegeerte", [Batavian Society for Experimental Philosophy], Rotterdam
- 2005: Member, Royal Netherlands Academy of Arts and Sciences, Amsterdam
- 2013: Fellow, Royal Society of Edinburgh, Edinburgh
- 2014: Member, European Academy of Sciences and Arts, Salzburg

- 2015: Fellow, Royal Academy of Engineering, London
- 2023: Fellow, European Academy of Sciences, Brussels

### **Awards & Honours**

- January 1990: Senior Research Fellow of the Netherlands Organization for Applied Scientific Research (TNO) in recognition of outstanding scientific contributions.
- May 1994: Award for Significant Paper for the article "Bifurcations in Finite Element Models with a Non-Associated Flow Law" published in the International Journal for Numerical and Analytical Methods in Geomechanics, awarded by the International Association for Computer Methods and Advances in Geomechanics.
- December 1995: The Composite Structures Award for best paper for the article "Free edge delamination in carbon-epoxy laminates: a novel numerical/experimental approach", with J.C.J. Schellekens, published in the International Journal of Composites Structures in 1994.
- December 1996: Max Planck Research Award given by the Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V. and the Alexander von Humboldtstiftung for outstanding research achievements (250.000,-- DMark).
- June 1998: Computational Mechanics Award given by the International Association for Computational Mechanics.
- October 1999: Spinoza Prize awarded by the Netherlands Organization for Scientific Research (highest scientific award in the Netherlands, 3 million guilders).
- February 2000: Distinguished Professor at Delft University of Technology.
- April 2002: Highly Commended Award for the article "Implicit integration of a generalized plasticity constitutive model for partially saturated soil" with H.W. Zhang, O.M. Heeres and B.A. Schrefler, published in Engineering Computations in 2001.
- May 2007: Distinguished Professor at Eindhoven University of Technology.
- October 2009: Award for "Mesh-independent discrete numerical representations of cohesive-zone models" with J.J.C. Remmers and A. Needleman as most cited paper in Engineering Fracture Mechanics
- October 2011: Officier dans l'Ordre National du Mérite [Officer in the National Order of Merit, France]
- December 2011: Royal Society Wolfson Research Merit Award (k£ 94).
- April 2015: ERC Advanced Grant (2.4 million euros)

- June 2015: JSCES Grand Prize (Japanese Society for Computational Engineering Science)
- August 2015: Doctor Honoris Causa of the Institut National des Sciences Appliquées de Lyon (INSA-LYON)
- May 2017: Highly Commended Award for the article “A new arc-length control method based on the rates of the internal and the dissipated energy” with S. May and J. Vignollet, published in Engineering Computations in 2016.
- September 2017: O.C. Zienkiewicz Medal (Polish Association for Computational Mechanics).

### **Editorships**

- Editor-in-Chief of "International Journal for Numerical Methods in Engineering" (J. Wiley & Sons), 1998 – present.
- Editor "International Journal for Numerical and Analytical Methods in Geomechanics" (J. Wiley & Sons), 1996 – present.
- Editor-in-Chief "Encyclopedia of Computational Mechanics" (J. Wiley & Sons), First Edition 2004, Second Edition 2018.
- Associate Editor of "The Aeronautical Journal" (Royal Aeronautical Society), 2002 – present.
- Volume Editor "Numerical and Computational Methods" of “Comprehensive Structural Integrity” (Elsevier), 2003.
- Section Editor “Encyclopedia of Aerospace Engineering” (J. Wiley & Sons), 2010.
- Section Editor “Encyclopedia of Continuum Mechanics” (Springer), 2018.
- Section Editor “Comprehensive Mechanics of Materials” (Elsevier), 2021 – present.
- Deputy Editor “Elsevier Book Series in Plasticity of Materials”, 2018 – present.

### **Editorial Boards (present)**

Computer Methods in Applied Mechanics and Engineering; Archive of Applied Mechanics; Structural Engineering and Mechanics; Engineering Computations: An International Journal; Computer Modelling in Engineering and Sciences; Journal of Computational Methods in Applied Sciences and Engineering; International Journal of Multiscale Computational Engineering; European Journal of Environmental and Civil Engineering; Computers, Materials and Continua; Vietnam Journal of Mechanics; International Journal of Automotive & Mechanical Engineering; Advanced Modelling and Simulation in Engineering Sciences; Materials; Meccanica.

## Other Academic Roles

- President of the International Association for Fracture Mechanics of Concrete Structures (IA-FraMCoS), 1998-2001.
- Member Executive Council International Association for Computational Mechanics (IACM), 2006-2010 (Dutch representative), and 2012 – present (UK representative).
- Member Board of Directors, of the Academic Assembly and of the Scientific Council of the International Centre for Mechanical Sciences (CISM), 2007 – 2012.
- Member Solid Mechanics Conference Committee of the European Mechanics Association (EuroMech), 2006 – 2012.
- Member General Assembly International Union for Theoretical and Applied Mechanics (IUTAM), 2004 – 2012.
- Member Governing Council Dutch Technology Foundation (STW), 2003 – 2012.
- Member Physics and Engineering Sciences Committee (PESC) of the European Science Foundation (ESF), 2007 – 2013.
- Referee for the following journals where I am not on the Editorial Board: "Journal of Engineering Mechanics", "Journal of Structural Engineering", "International Journal of Solids and Structures", "Journal of the Mechanics and Physics of Solids", "International Journal of Engineering Science", "Applied Mechanics Reviews", "Engineering Fracture Mechanics", "International Journal of Fracture", "Geotechnique", "Computers and Geotechnics", "Proceedings of the Royal Society, Series A", "Revue Europeenne des Elements Finis", "Composites Sciences and Technology", "Journal of Engineering Mathematics", "Computational Mechanics", "Theoretical and Applied Fracture Mechanics"
- Member PhD and habilitation committees of : Ecole Nationale des Ponts et Chaussées, Ecole Nationale des Mines de Paris, Université Paris VI, Université de Montpellier, The University of Queensland, The Catholic University of Leuven, Universität Stuttgart, Technische Universität Wien, Polytechnical University of Catalunya, INSA-Lyon, Swansea University, Heriot-Watt University, Ecole des Mines de Saint-Etienne, Université de Metz, Ecole Normale Supérieure de Cachan, Ecole Centrale de Lyon, Ecole Centrale de Nantes, Ecole Nationale Supérieure des Arts et Métiers, INSA Lyon, Université Paris-Est, TU Dresden, ETH Zürich.
- Expert for Technology Foundation (Netherlands), Deutsche Forschungsgemeinschaft, Agence National de la Recherche, Institut Universitaire de France, Australian Research Council, South African Research Council, Vetenskapsradet (Sweden), Research Council of Norway, Romanian National Research Council, ERC, Engineering and Physics Research Council, Doppler Foundation (Austria), Austrian Research Council, Czech

Research Council, Luxembourg National Research Fund, Royal Society (London), Royal Academy of Engineering, Danish Independent Research Fund, British Academy, Finnish Research Council, NCN (Polish Science Organization), RCG (Hong Kong), Romanian National Research Council

- Member assessment committee Chalmers University of Technology (Sweden), Politecnico di Milano (Italy), Ecole Normale Supérieure de Cachan (France), Institut du Pétrole (France), Centre des Matériaux (Ecole des Mines de Paris, France), Ecole Polytechnique (Palaiseau, France).

### **Publication & Citation Record**

- 2 books (one translated into German), 14 edited books, >270 journal articles, and 35 book chapters
- >16,000 citations in ISI; >20,000 in Scopus; >38,000 citations in Google Scholar
- H-index 69 (ISI), 75 (Scopus), 92 (Google Scholar)

### **Former and present PhD students**

57 dissertations have been completed under his supervision. Of his former PhD students and post-docs, 30 have academic positions in 9 different countries, including 16 full professors.