

Cambridge Judge Business School

Centre for Risk Studies Risk Summit 2018

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# RISKS BEYOND BOUNDARIES

20 June 2018

One Birdcage Walk

Westminster, London

Centre for  
**Risk Studies**



UNIVERSITY OF  
CAMBRIDGE  
Judge Business School

The Cambridge Centre for Risk Studies gratefully acknowledges its Annual Risk Summit 2018 partners:

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The Centre also acknowledges its research partners and collaborators:

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- Citi
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**Cambridge Risk Summit**

**Chair Dr Michelle Tuveson**, Executive Director, Cambridge Centre for Risk Studies

**Co-Chair Professor Daniel Ralph**, Academic Director, Cambridge Centre for Risk Studies & Professor of Operations Research, Cambridge Judge Business School

**Organising Committee Members**

**Andrew Freeman**, Risk Fellow, Cambridge Centre for Risk Studies & Director, The Finance Foundation

**Anna Marie Greenaway**, Director of University Relations, BP

**Daniela Gius**, McKinsey & Company

**Dr Sven Heilitag**, Partner, McKinsey & Company

**Alan Smith**, Global Head of Risk Strategy & Senior Executive Officer of Group Risk, HSBC Holdings PLC

**Risk Summit Staff**

**Olivia Majumdar**, Research Assistant, Cambridge Centre for Risk Studies

**Jayne Tooke**, Administrator, Cambridge Centre for Risk Studies

For the 2018 Risk Summit, the Cambridge Centre for Risk Studies has brought together leaders and decision makers from businesses, governments, academia and NGOs to examine the most salient topics in risk management.

Our theme for this year, *Risks Beyond Boundaries*, will be an exploration of risks that transcend national boundaries and jurisdictions, and that are truly systemic and international in nature. Through a series of expert presentations, we will engage with the risk management issues that these threats bring to light, including those related to the global financial system, climate change, and the convergence of digital and physical worlds.

This year's London-based Risk Summit takes advantage of being at the heart of an international city located within diverse global networks and systems. This complements the themes and issues we will be discussing throughout the day.

It also brings us closer to the business community for whom our research has the most significant impact, and continues to extend our research influence beyond the academic sphere and into greater real life applicability.

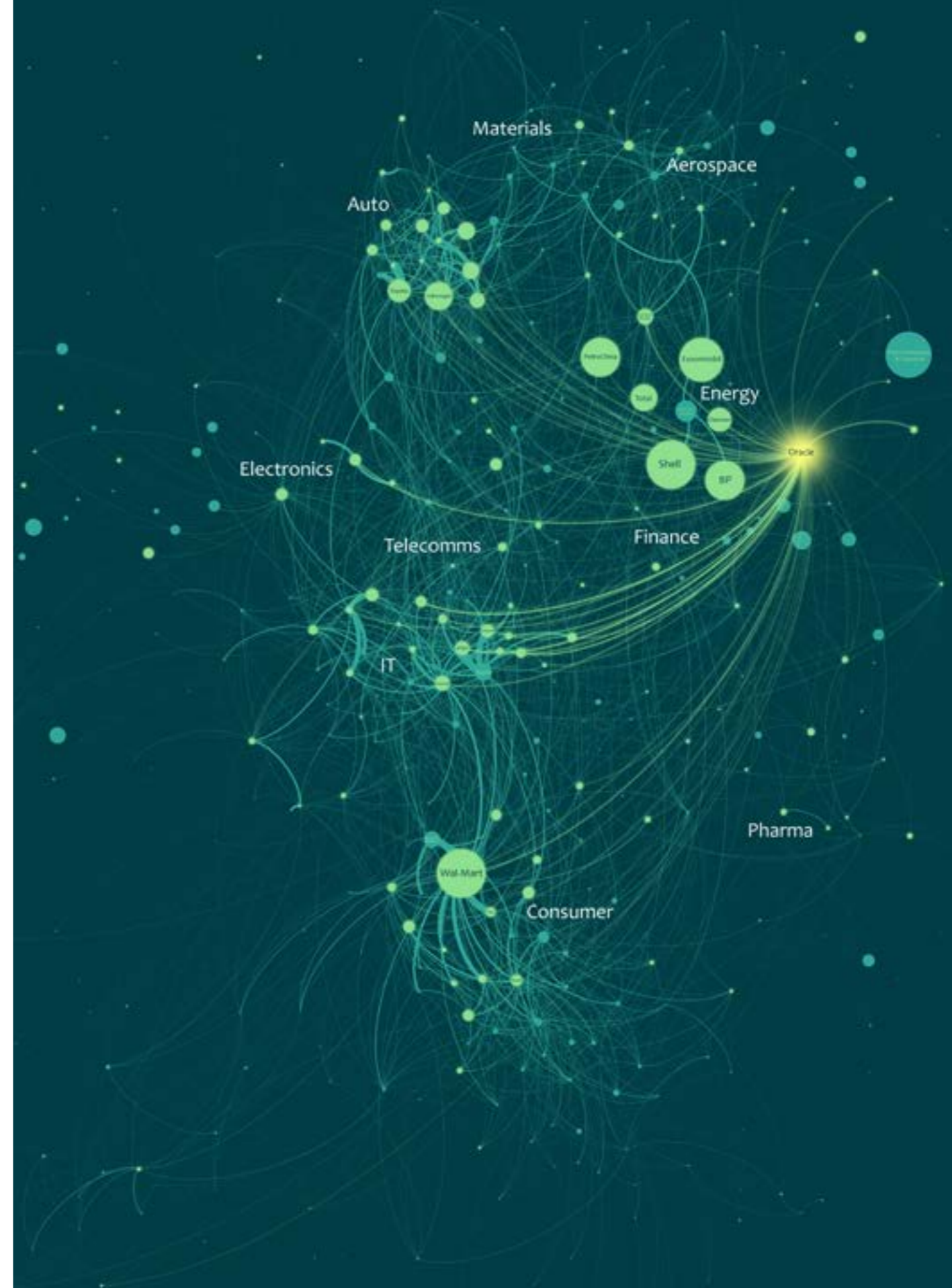
The chosen image for this year's conference reflects the spread of risks across global borders and boundaries, as well as the international, interconnected networks that comprise our modern economy.

We are grateful for your participation in this year's Risk Summit and look forward to a broad exchange of ideas during the day. Our Risk Summits continue to provide important insights into the development of our risk research and validation of its business applicability to the wider community.



*Pre-conference session***Wednesday 20 June 2018**

- 09:00-09:30 **Registration & Coffee**
- 09:30-09:45 **Session 1: Integrated Risk Assessment**  
**Modelling an Integrated Risk View**  
 Dr Andrew Coburn, Director of Advisory Board, Centre for Risk Studies
- 09:45-10:00 **Cambridge Global Risk Index for 2018**  
 Jennifer Copic, Research Associate, Centre for Risk Studies
- 10:00-10:15 **Multi-line Insurance Management**  
 Kayla Strong, Research Assistant, Centre for Risk Studies
- 10:15-10:30 **Example Scenarios with Systemic Consequences**  
 Kelly Quantrill, Research Assistant, Centre for Risk Studies
- 10:30-10:45 **Session 2: Risk and the Digital Economy**  
**2018 Cyber Risk Landscape**  
 Dr Jennifer Daffron, Research Associate, Centre for Risk Studies
- 10:45-11:00 **Threat Actors in the Cyber Black Economy**  
 Andrew Smith, Research Assistant, Centre for Risk Studies
- 11:00-11:15 **Cyber Terrorism Threat Intelligence**  
 Tamara Evan, Research Assistant, Centre for Risk Studies
- 11:15-11:45 Coffee break
- 11:45-12:00 **Session 3: Corporate Risk Profiling and Enterprise Risk Management**  
**Enterprise Perspective of Corporate Risk**  
 Dr Michelle Tuveson, Executive Director, Centre for Risk Studies
- 12:00-12:15 **Corporate Risk Profiling - Insights from Sectoral Case Studies**  
 Oliver Carpenter, Research Assistant, Centre for Risk Studies
- 12:15-12:30 **Cambridge Risk Framework - Managing Enterprise Risk**  
 Simon Ruffle, Director of Research & Innovation, Centre for Risk Studies
- 12:30-12:45 **Session 4: Risky Futures - Trend Risk and Business Decisions**  
**Climate Change, Protection Gap, and the Emerging Markets**  
 Arjun Mahalingam, Research Assistant, Centre for Risk Studies
- 12:45-13:00 **Overview of Trend Risks: Insights into Identification and Assessment**  
 Professor Daniel Ralph, Academic Director, Centre for Risk Studies and Professor of Operations Research, Cambridge Judge Business School



"Systemic Cyber Threats", the world's largest commercial companies and their trading relationships, showing the systemic linkages through major software providers, using Oracle as an example; created by Dr Andrew Skelton

**Wednesday 20 June 2018**

- 13:30-14:00 Registration and coffee/tea
- 14:00- 14:15 **Risk Summit Welcome**  
Dr Michelle Tuveson, Executive Director,  
Centre for Risk Studies
- Plenary Session 1: Global Financial Systems**  
*Moderator: Professor Daniel Ralph, Academic Director, Centre for Risk Studies and Professor of Operations Research, Cambridge Judge Business School*
- 14:15-15:00 **Keynote: The Perils of Pauline: How to Prevent the Economy from Blowing Up Finance and Finance from Blowing up the Economy**  
Martin Wolf, Chief Economics Commentator, *Financial Times*
- 15:00-15:45 **Panel Session: Global Financial Systems**  
*Moderator: Professor Daniel Ralph, Academic Director, Centre for Risk Studies and Professor of Operations Research, Cambridge Judge Business School*
- Professor Elroy Dimson, Chairman, Newton Centre for Endowment Asset Management, Cambridge Judge Business School
  - Tina Fordham, Managing Director and Chief Global Political Analyst, Citi Research
  - Dr Duncan Needham, Director, Centre for Financial History, University of Cambridge
  - Martin Wolf, Chief Economics Commentator, *Financial Times*
- 15:45-16:15 **Coffee Break and Group Photograph**
- Plenary Session 2: Climate Change Risks: Options for Response**  
*Moderator: Dr Andrew Coburn, Director of Advisory Board, Centre for Risk Studies*
- 16:15-16:25 **How Companies Can Adapt to Climate Risks**  
Hauke Engel, Associate Partner, McKinsey & Company
- 16:25-16:35 **Geoengineering, and Can We Refreeze the Arctic?**  
Dr Hugh Hunt, Reader, Department of Engineering, University of Cambridge

**Wednesday 20 June 2018**

- 16:35-17:15 **Panel Session: Climate Change Risks: Options for Response**  
*Moderator: Professor William J. Nuttall, Professor of Energy, The Open University*
- Dr Dominic Emery, Vice President, Strategic Planning, BP
  - Hauke Engel, Partner, McKinsey & Company
  - Dr Hugh Hunt, Reader, University of Cambridge, Department of Engineering
  - Zoe Knight, Managing Director, Group Head, HSBC Centre of Sustainable Finance
- 17:15-17:25 **McKinsey Risk Prize Announcement**  
*Presenters:*
- Dr Aleksander Petrov, Partner, McKinsey & Company
  - Professor Daniel Ralph, Academic Director, Centre for Risk Studies and Professor of Operations Research, Cambridge Judge Business School
- Plenary Session 3: Digital Physical Convergence**  
*Moderator: Daniel Franklin, Executive Editor, The Economist*
- 17:25-17:40 **Asset Tokenisation and Implications for Physical Trade and Global Business**  
Robert Wardrop, Co-founder and Director, Centre for Alternative Finance, Cambridge Judge Business School
- 17:40-17:55 **Confronting the Dark Realities of the Digital World**  
Eireann Leverett, Senior Risk Researcher, Centre for Risk Studies
- 17:55-18:15 **Fireside Chat: Digital-Physical Futures - Imagining Business and Societal Transformations**  
*Moderator: Daniel Franklin, Executive Editor, The Economist*
- Eireann Leverett, Senior Risk Researcher, Centre for Risk Studies
  - Robert Wardrop, Co-founder and Director, Centre for Alternative Finance, Cambridge Judge Business School
- 18:15-18:30 **Risk Summit Close**  
Dr Michelle Tuveson, Executive Director, Centre for Risk Studies
- 18:30-20:00 **Networking Reception**

### Cambridge - McKinsey Risk Prize Overview

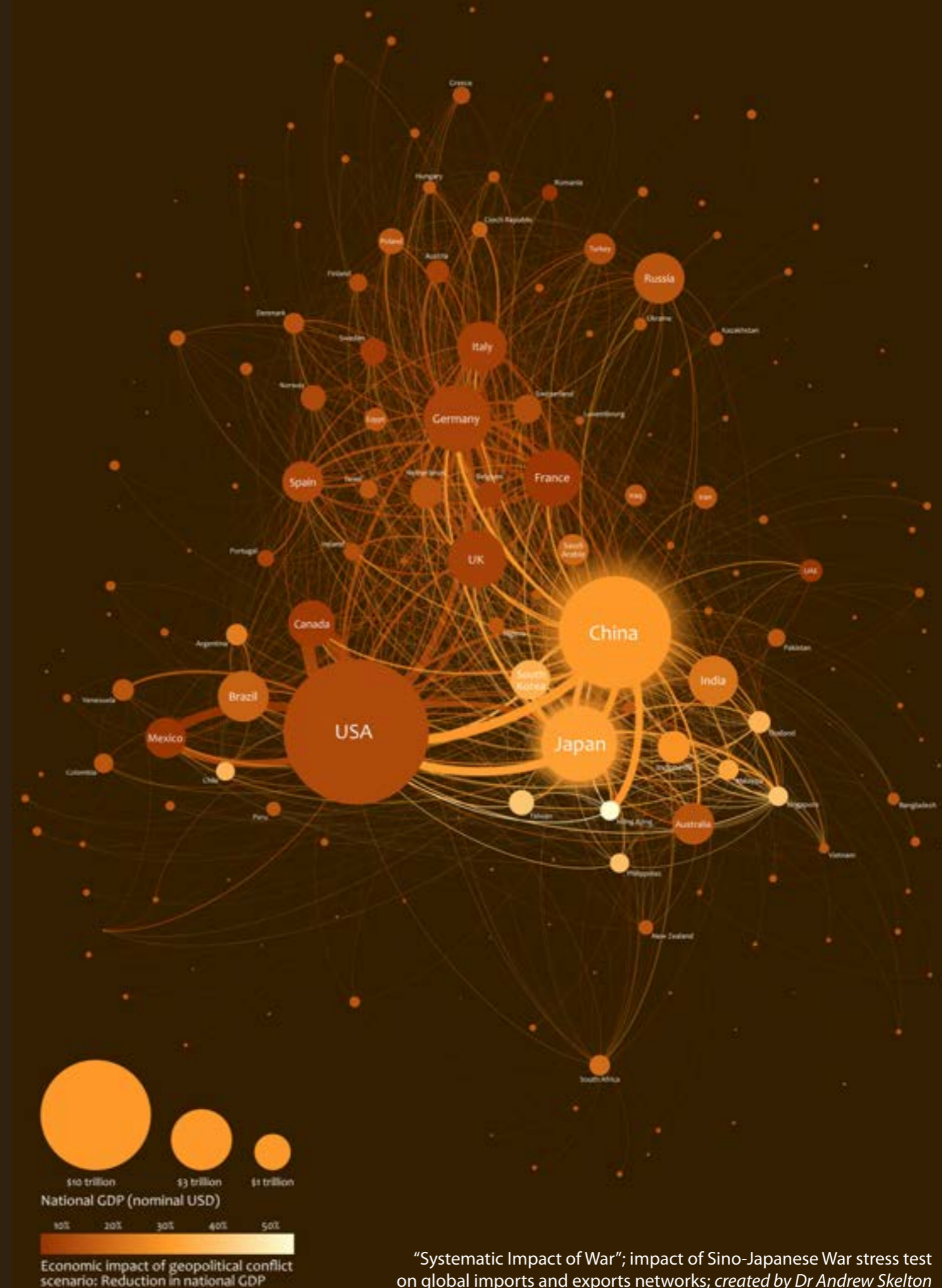
The Cambridge Centre for Risk Studies, in collaboration with McKinsey & Company, is pleased to award the Cambridge - McKinsey Risk Prize. The award recognises the best submission on risk management by a current student at the University of Cambridge Judge Business School or in another department in the University.

Judges include members of McKinsey's Global Risk Practice, the Editor-in-Chief of the McKinsey Working Papers, and members of the Cambridge Centre for Risk Studies.



### Cambridge-McKinsey Risk Prize Finalists

- **Ann Sofie Cloots, PhD Candidate, Faculty of Law, University of Cambridge, "Cryptocurrencies, Blockchain and Risk Management: Legal, Operational and Systemic Risks"**
- **Sean Day, MPhil Technology Policy, Cambridge Judge Business School, "Strategic Risks Threatening US Hospital Systems"**
- **Sipke Shaughnessy, PhD Candidate, Department of Geography, University of Cambridge, "How do East Africa's Pastoralists Deal with Risk?"**




**Andrew Coburn**

Director of Advisory Board, Cambridge Centre for Risk Studies

Andrew manages research project tracks at the Centre for Risk Studies and coordinates programme activities to ensure alignment with the business objectives of supporting organisations. Andrew's principal interests are in the risk of catastrophic collapse of complex systems, and how the risks of increasing interconnectivity in the global economy can be managed.

Andrew is Senior Vice President at Risk Management Solutions (RMS), the leading provider of catastrophe risk models to the insurance industry. He is one of the leading contributors to the creation of the class of catastrophe models that over the past 30 years has come to be an accepted part both of business management in financial services and of public policy making for societal risk.

He has extensive experience in developing risk models and using them for business decision support. Andrew has also provided research inputs into government policy. Andrew has published widely and is an Editorial Board Member of *Journal of Network Theory in Finance*. He is a Bye-Fellow at Christ's College, Cambridge.


**Elroy Dimson**

Research Director (Finance & Accounting) and Chairman of the Newton Centre for Endowment Asset Management, Cambridge Judge Business School

Professor Elroy Dimson chairs the Newton Centre for Endowment Asset Management at Cambridge Judge Business School, and is Emeritus Professor of Finance at London Business School. He is a Non-Executive Director of FTSE International, is on the Steering Committee of the Financial Economists' Roundtable, and is an Advisory Council member for Financial Analysts Journal. He is a Fellow of the Royal Historical Society, Honorary Fellow of CFA UK and of the Institute of Actuaries. His PhD is from London Business School.

Professor Dimson's books include *Triumph of the Optimists*, the *Global Investment Returns Yearbook 2016*, the *Global Investment Returns Sourcebook 2016* (all with Paul Marsh and Mike Staunton), *Endowment Asset Management* (with Shanta Acharya), and *Financial Market History* (with David Chambers, forthcoming). Publications since 2015 have been on subjects such as active ownership (Review of Financial Studies), real assets (Journal of Financial Economics), financial history (Journal of Financial and Quantitative Analysis), endowment strategy (Financial Analysts Journal), long-horizon investing (five book chapters), as well as case studies on manager selection and on stocks for the long run (both Harvard Business School).

Elroy Dimson has been an Emeritus Professor at London Business School since 2009. Prior to 2009, he served London Business School as Professor

of Finance, Faculty Governor, Chair of the Finance Area, Chair of the Accounting Area, Dean of MBA Programmes, and Director of the Initiative on Foundation and Endowment Asset Management. He has held visiting positions at Chicago, Berkeley, the Bank of England, and other institutions, as well as a variety of board positions.


**Dominic Emery**

Vice President, Strategic Planning, BP

Dr Dominic Emery is Vice President of Strategic Planning for BP, responsible for strategy development, long-term planning and policy.

Dominic is a geology graduate and has worked for BP since 1986. He has held positions in Upstream, working in Asia, the Middle East and Europe. He has also led European Gas and Power business development, as well as running power assets at BP industrial sites. He joined BP Alternative Energy in 2007, ran Emerging Business & Corporate Ventures in 2012 and moved to his current role in 2013.

In addition to his BP role, Dominic was the founding CEO of OGCI Climate Investments, a \$1bn fund set up by oil and gas companies to invest in technologies and projects to reduce carbon emissions. He is also on the Board of Extractive Industries Transparency Initiative and alternate on the Board of the UK Energy Technologies Institute.

Dominic has an MA from Oxford University, a PhD from Cambridge and has published two books and several papers. He is married with one daughter.


**Hauke Engel**

Partner, McKinsey & Company

Hauke is a junior partner at McKinsey & Company, where he works with companies in the mobility and energy space on sustainability and strategy topics. He is a member of tt30, the young think tank of the Club of Rome, and a Fellow of the Royal Geographical Society. He has a background in astrophysics and is an avid mountaineer.


**Daniel Franklin**

Executive Editor, *The Economist*

In 2018 Daniel Franklin was appointed to Executive and Diplomatic Editor. Daniel initially held the role of Executive Editor of *The Economist* from 2006 and Editor since 2003 of *The Economist's* annual publication, *The World in...;* which focuses on the year ahead. Daniel published *Megatech: Technology in 2050* in 2017 and his book on long-term trends, *Megachange: The World in 2050*, was published in 2012. Mr Franklin joined *The Economist* in 1983 to write about Soviet and East European affairs. As the newspaper's Europe Editor from 1986 to 1992 he covered the great European upheavals, from the collapse of communism to the signing of the Maastricht treaty. After a

stint as Britain Editor he moved to the United States as Washington Bureau Chief, covering the first Clinton term. In 1997 he moved back to London as Editorial Director of the Economist Intelligence Unit. From 2006 to 2010 he was Editor-in-Chief of Economist.com. For the following four years he was Business Affairs Editor, running the paper's coverage of business, finance, science and technology. He also helps with new initiatives undertaken by The Economist Group. His special report on corporate social responsibility, *Just good business*, was published in 2008.



### **Tina Fordham**

Managing Director and Chief Global Political Analyst, Citi Research

Tina Fordham is Managing Director and Chief Global Political Analyst at Citi, the first to hold this position. Fordham joined Citi in 2003, where she advises institutional investors and corporate boards on the implications of macro political, security and socio-economic factors.

Fordham also spearheads Citi's research on gender economics, and in 2016 was appointed to the United Nation's first High-Level Panel on Women's Economic Empowerment, which also includes IMF President Christine Lagarde.

She has been named four times in the FN's "Top 100 Most Influential Women in European Finance", *Harper's Bazaar* 150 Visionary Women in Britain and in 2017 was distinguished as being in the Top 100 Most Influential Geopolitics Experts worldwide, alongside Condoleezza Rice.

Fordham serves on the International Advisory Boards of the think tank Carnegie Europe and the School of International and Public Affairs at Columbia University, where she earned her Master's degree in International Affairs. She is also a member of the Citi Veterans Network.

Previously, she served as senior advisor in the UK Prime Minister's Strategy Unit and head of global political risk at Eurasia Group, where she started the firm's financial markets research business in 1999. She is a frequent commentator in the international press.



### **Hugh Hunt**

Reader in Engineering Dynamics and Vibration, University of Cambridge

Dr Hugh Hunt is a Reader in Engineering Dynamics and Vibration at Cambridge University. His research centres on the control of noise and vibration from underground railways, but he got caught up in geoengineering as Co-Investigator on the SPICE project, 2010-15, which looked at various aspects of SRM. He was responsible for an outdoor experiment, the 1km test-bed, which was intended to evaluate the influence of wind on the motion of a tethered balloon, but controversy over geoengineering experiments led to the test-bed being cancelled. He is now promoting other technologies for the removal of non-CO2

greenhouse gases, in particular methane and N2O. He also runs the Cambridge Climate Lecture Series which aims to raise awareness of the urgency around climate change.

Hugh is a regular presenter on television documentaries on Channel 4, PBS Nova and SBS, including "Dambusters: Building the Bouncing Bomb", "Attack of the Zeppelins", "Escape from Colditz" and "Guy Martin Wall of Death". He is Keeper of the Clock at Trinity College, a clock which is demonstrably the most accurate tower clock in the world. He has an impressive collection of boomerangs which he uses to inspire students in the study of dynamics and mechanics.



### **Zoë Knight**

Managing Director, Group Head, HSBC Centre of Sustainable Finance

Zoë Knight is a Managing Director and Group Head of the HSBC Centre of Sustainable Finance. She joined HSBC in 2010 and most recently led the Climate Change Centre of Excellence within Global Research, having been an investment analyst at global financial institutions since 1997.

For ten years she focused on equity strategy, before focusing on socially responsible investing. Since joining HSBC Zoë has co-authored reports on low-carbon opportunities in bond and equity markets, as well as long-term carbon and water risks. Previously, she contributed a chapter to 'Investment opportunities for a low-carbon world' (2009). Throughout her career she has been ranked in Exel and Institutional Investor.

She also sits on the Board of the World Energy Council UK and holds a BSc (Hons) Economics from the University of Bath.



### **Eireann Leverett**

Senior Risk Researcher, Cambridge Centre for Risk Studies

Eireann Leverett has studied psychology, philosophy, artificial intelligence, software engineering, and computer security at various times in his life. He holds a BEng from Edinburgh University and an MPhil from the University of Cambridge in Advanced Computer Science.

At the Centre for Risk Studies his research focuses upon technological disasters and the economic impacts of computer security failures or accidents. He has experience of compromising the security of organisations, and assisting them to improve their security postures through a variety of short and long term methods. He is interested in computer security at scale, security economics, systems security, incident response, critical infrastructure protection, safety, firmware signing, exploit markets, vulnerability management, quality assurance, indicators of compromise, modelling, networks, risk, visualisations, and zero knowledge proofs. He is a frequent public speaker on these subjects.



**Duncan Needham**

Senior Risk Researcher, Cambridge Centre for Risk Studies

Duncan Needham is Director of the Centre of Financial History at Newnham College, Director of the MPhil programme in Economic and Social History at the University of Cambridge, Associate Lecturer at the Faculty of History, and a Senior Risk Researcher at the Centre for Risk Studies.

After completing his first degree at the London School of Economics, and a Masters at Cass Business in Shipping, Trade and Finance, Duncan worked at Credit Suisse Financial Products and JP Morgan, where he ran the banks and financial desk, trading bonds and credit default swaps. He then spent four years running Cairn Capital's Investment Grade Collateralised Debt Obligation business, before returning to academia in 2008 to complete his MPhil in Economic History.

Duncan recently completed his PhD at the University of Cambridge. This was published by Palgrave Macmillan in 2014 as *UK Monetary Policy from Devaluation to Thatcher, 1967-82*.

**Professor William J. Nuttall**

Professor of Energy, School of Engineering and Innovation, The Open University

Dr William J. Nuttall is Professor of Energy at The Open University, based in Milton Keynes, UK. He joined the OU in October 2012 from Cambridge University where he had taught Technology Policy for ten years.

Professor Nuttall's career has taken from experimental physics (PhD MIT USA 1993) to technology policy with an emphasis on nuclear energy policy.

He is Open University lead for the Imperial-Cambridge-Open Centre for Doctor Training in nuclear energy; he is Honourary Editor and Chair of the Editorial Panel for the Proceedings of the Institution of Civil Engineers - Energy; and he is a Fellow of Hughes Hall Cambridge. He has extensive policy experience for the UK Government and the institutions of the European Union.

He was recently involved in a major EPSRC funded collaboration concerning policy for severe nuclear accident response. That multifaceted study concluded that a policy of large-scale population relocation following a severe nuclear accident will rarely be of significant benefit and it can come at great cost in financial and other terms.

**Aleksander Petrov**

Partner, McKinsey & Co

Aleksander Petrov is a Partner at McKinsey and Leader of the UK Risk Practice. He has broad experience in capital markets, derivatives pricing and portfolio management, supporting clients on a variety of risk topics focused on asset analysis, stress testing and recovery planning. Prior to joining McKinsey & Co in 2009 Aleksander Petrov spent approximately 10 years in various quant and trading roles within the European fixed income and structured finance industry.

Dr Petrov holds a PhD in Finance, University of Vienna, Austria, focusing on derivatives use in CEE markets. He was a Research Associate at the London School of Economics and is a CFA charter holder. He has held teaching assistantship positions at the University of Vienna and Sofia.

**Daniel Ralph**

Academic Director, Cambridge Centre for Risk Studies and Professor of Operations Research, Cambridge Judge Business School

Professor Daniel Ralph is a Founder and Academic Director of the Centre for Risk Studies, Professor of Operations Research at the University of Cambridge Judge Business School, and a Fellow of Churchill College. Daniel's research interests include identification and management of systemic risk, risk aversion in investment, economic equilibria models and optimisation methods. Management stress tests, via selection and construction of catastrophe scenarios, is one focus of his work in the Cambridge Centre for Risk Studies. Another is the role and expression of risk management within organisations. Daniel engages across scientific and social science academia, a variety of commercial and industrial sectors, and government policy making. He was Editor-in-Chief of *Mathematical Programming (Series B)* from 2007-2013.

**Simon Ruffle**

Director of Research & Innovation, Cambridge Centre for Risk Studies

Simon plays a key coordinating role in the Centre's research programme, and leads several research projects. He is developing methods for storing and applying the Centre's stress test scenarios and other risk assessment tools to macro-economic analysis, the financial markets and insurance loss aggregation. He is researching how network theory can be applied to understanding the impact of catastrophes in a globalised world, including city and country economies, supply chains, insurance and banking.

He is working on multi-threat integrated scenario-based risk assessment, encompassing over 12,000 scenarios in 22 different threat categories across almost 300 cities around the world representing about half of global

GDP. The consequences of these scenarios are quantified in terms of their 'GDP@Risk' - a unified metric that can be used to compare and standardise different types of threat.

He is working on data interchange standards for multi line insurance and is developing proof of concept tools to carry out risk assessment of individual companies and explore risk mitigations available through a range of insurance products. He is a member of the Centre's Executive Team and manages external sponsor relationships. He advises government and speaks regularly at seminars and conferences.



**Michelle Tuveson**

Executive Director, Cambridge Centre for Risk Studies

Dr Michelle Tuveson brings 20+ years of corporate experience within the technology and consulting sectors to further the development of better risk models for the future. During Dr Tuveson's tenure, the Centre for Risk Studies has become a world leading provider of research and thought leadership in scenario-based modelling of multi-disciplinary risks to business. Her responsibilities include the overall executive leadership in scenario-based modelling of multi-disciplinary risks to businesses. Her responsibilities include the overall executive leadership at the Centre. This includes developing partnership relationships with corporations, governments, and other academic centres.

Dr Tuveson leads the Cambridge Chief Risk Officers Council, chairs the Centre's Annual Risk Summits, is an IEEE Standards Committee Member on the General Principles for Artificial Intelligence, is an advisory board member to Elevate City, and former advisory board member to the World Economic Forum's Global Risk Report. She is a frequent commentator and speaker and her articles have been published in reports such as Banking & Financial Services Policy Report (Wolters Kluwer) and Financial Times Special Report on Risk Management. Dr Tuveson has worked in corporations within the technology sector with her most recent position in the Emerging Markets Group at Lockheed Martin. Prior to that, she held positions with management strategy firm Booz Allen & Hamilton, and U.S. R&D organisation MITRE Corporation. Dr Tuveson's research topics include risk culture and governance, corporate risk profiling, and the role of the Chief Risk Officer. She has been awarded by the Career Communications Group, Inc. as a Technology Star for Women in Science, Technology, Engineering and Maths (STEM). She earned degrees from the Massachusetts Institute of Technology, Engineering and Maths (STEM).



**Robert Wardrop**

Director and Professor of Management Studies, Cambridge Judge Business School

Robert is a sociologist in the Finance & Accounting subject group at Cambridge Judge Business School. He has a successful track record of investing in and advising small and mid-sized firms in North America, Europe and Asia spanning over 30 years, and this experience led to his interest in understanding how and why alternative channels of finance emerge outside the traditional banking and capital markets system. His current research focuses on small and mid-sized firms that issue bonds as an alternative to bank financing, with the aim of better understanding the decision-making behaviour of firm owners and classes of investors across different economies. In addition to his academic role at the University of Cambridge, Robert currently serves on the Global Advisory Boards of the University of Chicago Booth School of Business and the School of Business at Queen's University in Kingston, Canada.



**Martin Wolf**

Associate Editor and Chief Economics Commentator, *Financial Times*

Martin Wolf is Associate Editor and Chief Economics Commentator at the *Financial Times*, London. He was awarded the CBE (Commander of the British Empire) in 2000 for services to financial journalism. He was a member of the UK government's Independent Commission on Banking between June 2010 and September 2011. Mr Wolf was made a Doctor of Science (Econ), *honoris causa*, by the London School of Economics in 2006 and a Doctor of Science, *honoris causa*, by Warwick University, in 2009. He is an honorary fellow of Nuffield College, Oxford University and of King's College, London.

Mr Wolf won the Ludwig Erhard Prize for economic commentary for 2009. He won "Commentariat of the Year 2009" at the Comment Awards, sponsored by Editorial Intelligence. He was placed 15th in Foreign Policy's list of the "Top 100 Global Thinkers" in December 2009 and 37th in the same list for 2010. He was joint winner of the 2009 award for columns in "giant newspapers" at the 15th annual Best in Business Journalism competition of The Society of American Business Editors and Writers. He won the 33rd Ischia International Journalism Prize in 2012. He won the Overseas Press Club of America's prize for "best commentary on international news in any medium" for 2013.

His most recent publications are *Why Globalization Works* (Yale University Press, 2004), *Fixing Global Finance* (Washington DC: Johns Hopkins University Press, and London: Yale University Press, 2008 and 2010) and *The Shifts and The Shocks: What we've learned – and have still to learn – from the financial crisis* (London and New York: Allen Lane, 2014).

The Centre's world leading research includes scenario development, network analysis, and macroeconomic modelling of shock events

**Risk Research Application Areas**

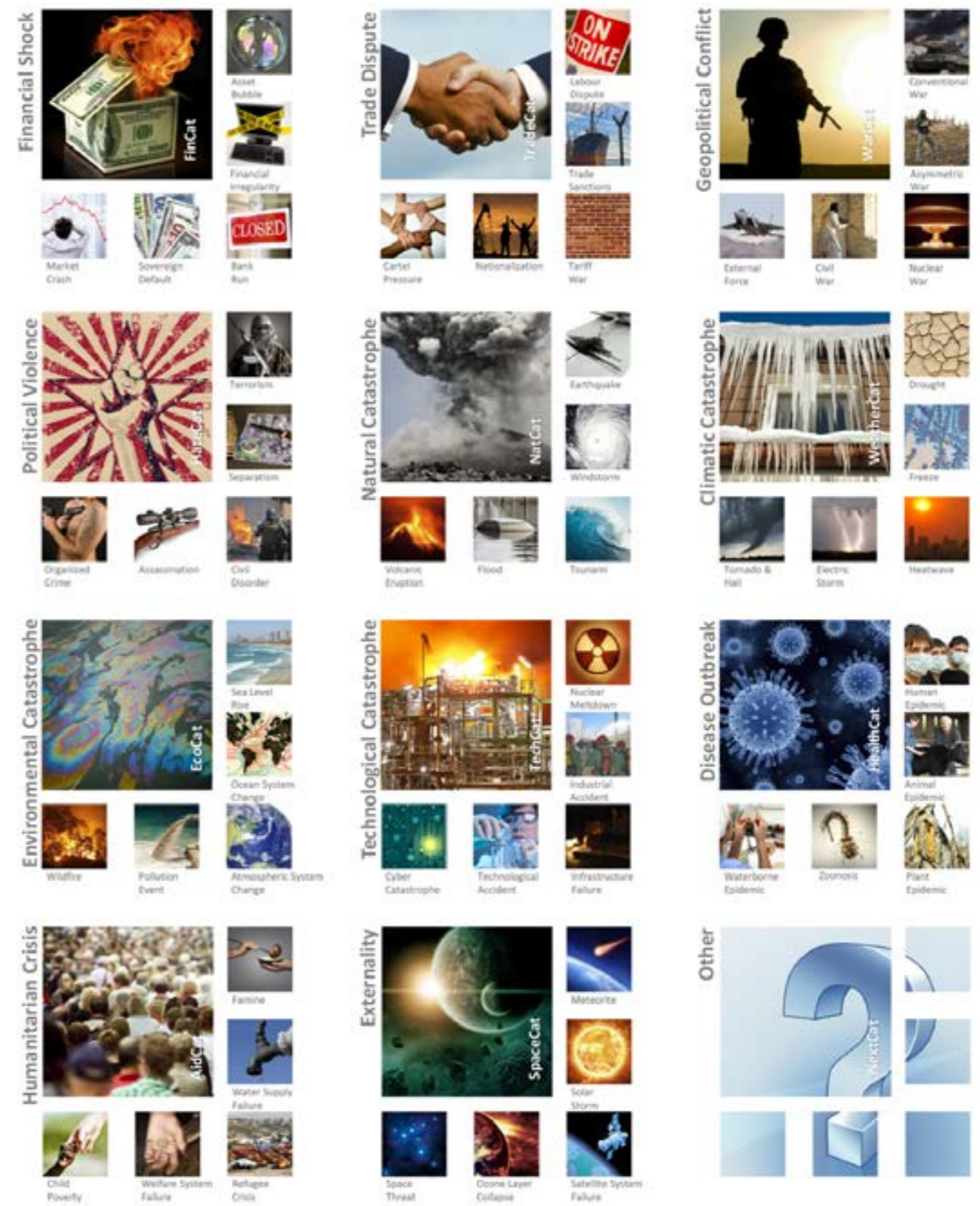
The Centre's research focuses on four main research application areas: Integrated Risk Assessment, Risks and the Digital Economy, Trend Risks, and Understanding Corporate Risks.

<p><b>A. Integrated Risk Assessment</b></p> <p>Updating, improving, and extending the framework, datasets and analytics of the Cambridge Global Risk Outlook, developing standardised risk metrics for multiple threats to the global economy.</p>	<p><b>B. Risks and the Digital Economy</b></p> <p>Research into the risks inherent in the growth of the digital economy, examining themes such as: cyber threats from social, political, economic or ideological actors; the role of nation states; and the proliferation of big data.</p>
<p><b>C. Trend Risks</b></p> <p>Continuing the research into individual threats, developing scenarios, and improving the understanding of emerging and rapidly changing risks such as: climate change; conflict; social inequality; technology; the digital economy and the Fourth Industrial Revolution; and the rise of general liability.</p>	<p><b>D. Understanding Corporate Risks</b></p> <p>Aligning the research activities and outputs to business decisions and practical applications in improving risk management practices in business and policy-making.</p>

**The Cambridge Risk Framework**

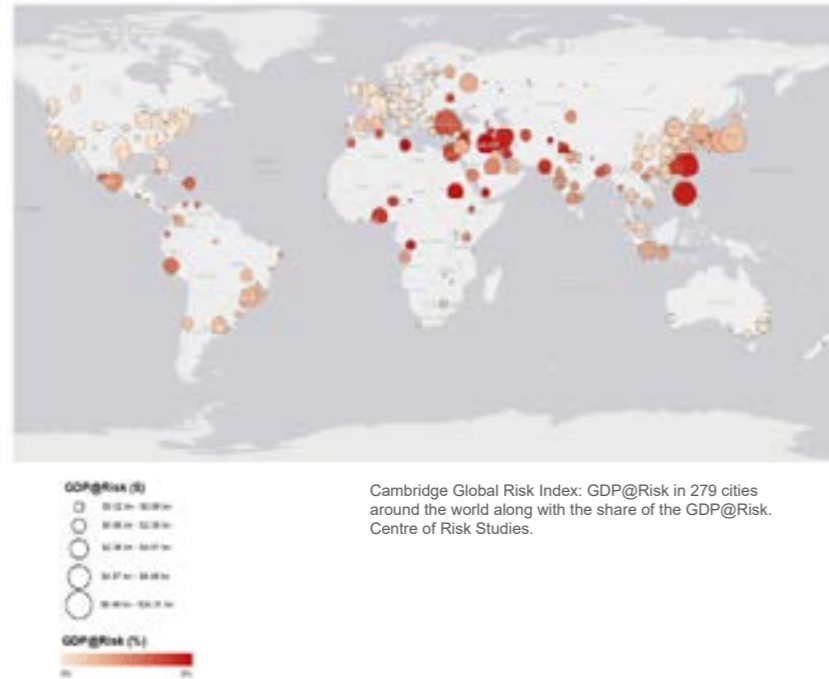
The Cambridge Risk Framework is a foundational element of the research programme of the Centre for Risk Studies. It provides an extensive set of objectively-defined scenarios of potential external shocks that could arise from any of 22 different threat types to locations of interest all across the world. The macro risks and threat types include financial crises, geopolitical risks, natural catastrophes, technological threats, and disease and external threats which identify emerging and system risks. The research focusses on business applications of management science to reduce risk.

A key contribution of the research is the standardisation of scenario selection (e.g. 1% annual probability of exceedance as a '1-in-100' event) for emerging risks. An innovative methodology has been developed to assess the different facets of scenario impact, ranging from direct loss, to macroeconomic consequences, to investment portfolio effects. This involves developing techniques of network analysis, including gathering and visualising data on the interconnectivity of the global economy.



### The Cambridge Global Risk Index

The Cambridge Risk Framework is used to provide a Global Risk Index: a quantitative assessment of the risk of all of the significant systemic shock threats to the global economy. The Cambridge Global Risk Index uses GDP@Risk assessments to derive economic output loss at city level for the most significant cities of the world, responsible for over half of global GDP.



Cambridge Global Risk Index: GDP@Risk in 279 cities around the world along with the share of the GDP@Risk. Centre of Risk Studies.

The index makes use of an extensive data set collated on cities, threat maps, and historical precedents for 22 different threats. The resulting model provides a holistic estimate of future catastrophe cost from each of the major threats in our taxonomy for the global economy. We believe this is a major advance in the field of catastrophe studies and provides a platform for the Centre's research. The integration of datasets and multiple threat models constitutes Project Pandora - a specific research track on multi-threat analytics.

### Emerging and Systemic Risks

The Centre for Risk Studies provides research into emerging risks and potential sources of catastrophes that are less well understood. Ongoing research into cyber risk includes tracking the changing landscape of hacker technologies and motivations, and the potential for correlated cyber attacks causing losses to multiple companies.

### The Shifting Risk Landscape

In 2018, the Centre for Risk Studies has taken a diverse look at the evolving risk landscape, with a particular focus on emerging risks that the global economy faces, including the possibility of cyber threats and terrorism. We have continued to make strides in our research on risk insurance and run an active and dynamic engagement programme of seminars and workshops in the UK and abroad.

#### Launch of the Cambridge Global Risk Index for 2018



In June 2018, we launched the 2018 update of the Cambridge Global Risk Index, in collaboration with Lloyd's of London and branded as the Lloyd's City Risk Index. Risk profiles of the 200+ cities and information on index methodology can be found on our website: <https://www.jbs.cam.ac.uk/faculty-research/centres/risk/>

#### Cyber Security Risk Events

The Centre continues to provide leading research on cyber security risk to the business community. The Centre, in collaboration with RMS, launched the *Cyber Risk Outlook* for 2018.

The Centre is also working, in collaboration with Nanyang Technological University (NTU), to help develop the cyber insurance markets for the Asia Pacific region.



Cyber scenario workshop, run in partnership with NTU, Singapore



### Executive Team

**Professor Daniel Ralph**, Academic Director

**Dr Michelle Tuveson**, Executive Director

**Dr Andrew Coburn**, Director of Advisory Board

**Simon Ruffle**, Director of Research and Innovation

### Research Associates

**Jennifer Copic**, Research Associate

**Dr Jennifer Daffron**, Research Associate

### Risk Researchers

**Dr Jay Chan Do Jung**, Risk Researcher

**Dr Scott Kelly**, Senior Risk Researcher

**Éireann Leverett**, Senior Risk Researcher

**Dr Duncan Needham**, Senior Risk Researcher

**Dr Edward J. Oughton**, Risk Researcher

**Dr Andrew Skelton**, Senior Risk Researcher

### Research Assistants

**James Bourdeau**, Research Assistant

**Oliver Carpenter**, Research Assistant

**Ken Deng**, Research Assistant

**Tim Douglas**, Research Assistant

**Tamara Evan**, Research Assistant

**Arjun Mahalingam**, Research Assistant

**Olivia Majumdar**, Research Assistant

**Kelly Quantrill**, Research Assistant

**Andrew Smith**, Research Assistant

**Kayla Strong**, Research Assistant

### Associates and Advisors

**Professor Kern Alexander**, Professor of Banking and Financial Market Regulation, University of Zurich, and Risk Fellow, Cambridge Centre for Risk Studies

**Lee Coppack**, Senior Advisor, Risk Communication

**Andrew Freeman**, Risk Fellow, Cambridge Centre for Risk Studies and Founder and Managing Director of Cambridge Research Associates

### Administration

**Jayne Tooke**, Administrator

**Cambridge Judge Business School**, Finance, Legal and Administration Offices

### Recognition for the Centre

#### 2018 Cyber Risk Innovation of the Year

Cambridge Centre for Risk Studies and Pool Re, shortlisted by the Advisen Cyber Risk Awards committee

#### 2018 Risk Modeller of the Year

Cambridge Centre for Risk Studies, shortlisted by the Reactions London Market Awards committee

**Cambridge Global Risk Outlook 2018**

This is the update of the Cambridge Global Risk Index for 2018. This year's findings include an increased level of geopolitical risk across the 200+ cities profiled in the Index.

**Impacts of Severe Natural Catastrophes on Financial Markets**

This report explores the potential for very large natural catastrophes to trigger market shocks and subsequent economic downturns that would have an impact on an insurance company's balance sheet. It includes six natural catastrophe scenarios.

**Steering the Course: An Emerging Risk Report**

"Steering the Course" presents an alternative model to help insurers understand the 'tail risk' of potential losses they might experience in their marine portfolio.

**Cyber Risk Outlook 2018**

This report explores the rapidly changing cyber landscape. The dimensions of cyber risk are increasingly international as losses due to cyber attacks are being reported in almost every country in the industrialised world.

**Multi-Threat Risk Analysis and Insurance Growth Opportunities**

Produced in collaboration with the American International Group (AIG). This report is part of the Cambridge Risk Framework and uses findings from the Cambridge Global Risk Index.

**Cyber Terrorism: Assessment of the Threat to Insurance**

An assessment of the current status and future shape of the cyber terrorist threat to the UK mainland and economy. The research was undertaken over the course of two years in collaboration with Pool Re Ltd., the national terrorism pool, and provides the basis of a change in policy to the Pool Re Scheme.

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**Cambridge Centre for Risk Studies**

Cambridge Judge Business School  
University of Cambridge  
Trumpington Street  
Cambridge  
CB2 1AG

T: +44 (0) 1223 768386

F: +44 (0) 1223 339701

[enquiries.risk@jbs.cam.ac.uk](mailto:enquiries.risk@jbs.cam.ac.uk)

<https://www.jbs.cam.ac.uk/faculty-research/centres/risk/>

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Centre for Risk Studies

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**Office of External Communications**

Cambridge Judge Business School  
University of Cambridge  
Trumpington Street  
Cambridge CB2 1AG