



MESSAGE FROM THE DIRECTOR

We've just completed our first year under the refreshed CEBRA Deed with the Department of Agriculture and Water Resources and the Ministry for Primary Industries. I couldn't be more pleased with our position and our relationships with our friends and stakeholders. We owe this privilege to an incredible amount of hard work by the team here at CEBRA. Our continuing high productivity and timeliness is a credit to the deputies: Dr Susie Hester, Dr Steve Lane, and Dr Aaron Dodd; our outstanding team of project managers: Susie, Steve, Tom Kompas, and Karen Schneider; and the excellent support that we receive from the business team, Cassie Watts and Erica Kecorius. I warmly thank you all!

CEBRA researchers regularly champion CEBRA's research at international workshops, meetings and conferences, and through many published journal articles. As a consequence of the recent International Biosecurity Data Analytics Working Group meeting (more details in this newsletter), Dr Steve Lane was invited by Dr Barney Caton to visit the USDA Center for Integrated Pest Management in Raleigh, North Carolina in June, and present an R workshop. In April, CEBRA sponsored the *Mathematics of Biological Systems Management Symposium* where Dr Susie Hester presented a keynote titled *Bioeconomics: what can economics add to biological models?* At the same symposium, Dr Jason Whyte presented a talk, *Tend to your model or data may pull the wool over your eyes*; Dr Daniel Spring presented on

Strategies for eradicating large invasions; Dr Libby Rumpff presented on *Integrating ecological models to support multi-objective bushfire management decisions*; and I presented a talk titled *CEBRA work makes an impact on both policy and practice of biosecurity*.

Also in April, Professor Tom Kompas spoke about *The Effect of Natural Disasters from Climate Change on National Incomes: Solving a Stochastic (Jump-Diffusion) Intertemporal GTAP Model* at the Fifth International Symposium in Computational Economics and Finance in Paris. In June, Dr Anca Hanea attended the SRA Europe Conference: *Risk & Uncertainty – From Critical Thinking to Practical Impact* at the Mid Sweden University in Östersund, Sweden and presented on *Calibrating experts' probabilistic assessments for improved decision making*. She also presented an invited talk on *Bayesian networks in Uninet* at the Equinor Digital Subsurface Project Leaders meeting in Norway.

In May, I gave an invited keynote titled *Collaborative approaches to evidence-based policy making in biosecurity* for the Department of Agriculture and Water Resources' National Science Exchange Conference and in March I moderated *Ants, Bugs and Biters: Q & A Debate* at Monash University, organised by the Invasive Species Council. It was a very pleasant and collegial affair despite my best efforts to inject controversy!

For the first time, CEBRA held its Advisory Board meeting in Wellington, and coupled the meeting with a strategic half-day workshop on the future of biosecurity research. This very useful and eye-opening workshop helped us to identify the strategic directions that CEBRA could consider in order to be best positioned to make the highest impact on biosecurity challenges.

This month, we welcome Dr Rezvan (Rose) Hatami, who recently joined CEBRA from La Trobe University, where she completed her PhD on causal modelling and its application to environmental impact studies. Before that, she did a Masters in natural resources at Isfahan University of Technology, Iran. Her main research interests are in natural resources, water management, environmental science, statistics, and ecology. Welcome Rose!

Andrew Robinson

Managing Director,

Centre of Excellence for Biosecurity Risk Analysis

IN THIS EDITION

- 1 MESSAGE FROM THE DIRECTOR
- 2 DR TERRY WALSH - CEBRA ASSOCIATE
- 2 SRA-ANZ 2018 CONFERENCE
- 3 INTERNATIONAL BIOSECURITY DATA ANALYTICS WORKING GROUP
- 3 WORKSHOP: SPATIAL POINT PATTERN ANALYSIS

Dr Terry Walshe – CEBRA associate

Terry Walshe is an associate of CEBRA. He conducts risk analysis and decision-making under uncertainty in a wide range of settings. His past work includes contributions to forest management, conservation planning, marine science, alpine ecology, public health, river restoration, fire management, defence, irrigated agriculture and biosecurity.

Terry's work deals with the intersection of technical and social dimensions of decision-making. He is especially interested in developing techniques that better address societal values and frailties in judgment. His favourite researcher is psychologist Robyn Dawes, who wrote a book titled *Everyday irrationality: How pseudoscientists, lunatics, and the rest of us systematically fail to think rationally*.

'There is an old schoolyard prank where you ask, "What's one plus four? What's five plus two? What's seven take away three? Name a vegetable?" About nine out of 10 people answer "Carrot," Terry says. Given the human brain is wired to respond a certain way even to trite questions, Terry believes we're ill-equipped to deal with more substantive questions in which we have some physical or reputational stake. When the context involves uncertain payoffs and the possibility of regret, our

ability to make good choices gets even worse. Terry tries to help organisations make coherent choices.

Terry is often asked to help out with technical analyses involving probabilistic prediction when what he thinks might really be needed is a good way of negotiating difficult trade-offs among stakeholders. According to Terry, Philip Tetlock¹ said it best: *People, certainly the mass public but probably also elites, will be slow to recognize that core values clash... they will rely on decision-evasion tactics such as buck-passing, procrastination, and obfuscation to escape responsibility for making trade-offs that inevitably leave some constituency feeling it has gotten the short end of the trade-off stick.*

Some of the problems that Terry has worked on include how to account for non-market values in forest management, how to prioritize the rebuild of aging coastal infrastructure, how to estimate the value of information in biodiversity conservation, and how to identify pests and diseases of national environmental importance. He has also helped the Clean Energy Regulator characterise risks involved in administering the Emissions Reduction Fund.



"I am happy to chat with anyone interested in making good decisions and sound policy in difficult circumstances," Terry says.

Terry Walshe | Decision Scientist

Centre for Environmental and Economic Research

The University of Melbourne, Victoria 3010 Australia

T: +61 3 9035 6413 M: +61 467 871 254

¹ Tetlock, P.E. (2000) Coping with trade-offs: psychological constraints and political implications. In *Political Reasoning and Choice* (Lupia, S. et al., eds), pp. 239–263, University of California Press.

SRA-ANZ 2018 Conference

When: 26th-27th September 2018 **Where:** The University of Sydney

While the rapid growth of risk research across multiple fields over the past few decades has successfully produced a large and rich body of literature, it has also resulted in diverse but disconnected perspectives on risk. This is because different disciplines have undertaken independent investigations into the nature of risk and its measurement. This is akin to passing a beam of light through individual panes of glass: it effectively deprives scholars of the opportunity to gain rich insights into the multifaceted nature of risk. This gives us the theme of this year's conference, 'Risk Prisms'. Keynote speakers include CEBRA Director, Associate Professor Andrew Robinson and SRA President Professor Terje Aven.

For more information visit: <http://www.sraanzconference.org.nz/>

International Biosecurity Data Analytics Working Group

In April, CEBRA hosted the first International Biosecurity Data Analytics Working Group meeting at the University of Melbourne. The weeklong program was attended by academic and government representatives from four corners of the world: the USA, Canada, New Zealand and Australia. Talks covered a range of topics relating to biosecurity, from big data to sampling, with an overview of analytics in Australia, New Zealand, Canada and the USA given. CEBRA Director Andrew Robinson spoke about CEBRA's role, as well as leading the discussion on *Lab seed testing* and *Models for profiling*. Steve Lane and Matthew Chisholm led the discussion on *International passengers*. The gathering provided a platform for attendees to network and exchange ideas, and also included a field trip to:

- the Victorian Department of Economic Development, Jobs, Transport and Resources campus in Attwood,
- the Department of Agriculture and Water Resources' Post-Entry Quarantine facility in Mickleham,
- and the Yarra Valley, to study the impacts of phylloxera on grapevines.



It was a very successful meeting and has catalysed a bimonthly conference call discussion among the analytics teams of the regulators and other stakeholders.

Workshop: Spatial Point Pattern Analysis

When: 3-5 September 2018 **Where:** The University of Melbourne, Parkville

Spatial data that take on the form of a map or point locations are common in a wide range of scientific fields. Methods to appropriately analyse such data have developed tremendously over the past 25 years.

This three-day workshop will cover many recently developed methods as described in the book '*Spatial Point Patterns Methodology and Applications in R*' by Adrian Baddeley, Ege Rubak and Rolf Turner, and available in the **Spatstat** package in R. The workshop will consist of a mixture of lectures and computer-based exercises, and will be taught by three field experts, Prof. Adrian Baddeley from Curtin University, Western Australia, Prof. Rolf Turner from Auckland University, New Zealand, and Dr. Tilman Davies from the University of Otago, New Zealand.

This workshop has been supported by The Australian Research Council Centre of Excellence For Mathematical and Statistical Frontiers (ACEMS), The centre for Veterinary Epidemiology at the University of Melbourne (VE@M), The Centre of Excellence for Environmental Decisions at the University of Melbourne (CEED), CEBRA, and the Faculty of Veterinary and Agricultural Sciences at the University of Melbourne.

To register: <https://redcap7.adelaide.edu.au/redcap/surveys/?s=DTHF9K34Y4>



Follow CEBRA on Facebook

<https://www.facebook.com/cebrauom/>



Follow CEBRA on Twitter

https://twitter.com/CEBRA_UoM?lang=en

To subscribe to the CEBRA newsletter visit <http://cebra.unimelb.edu.au/engage/contact-us>