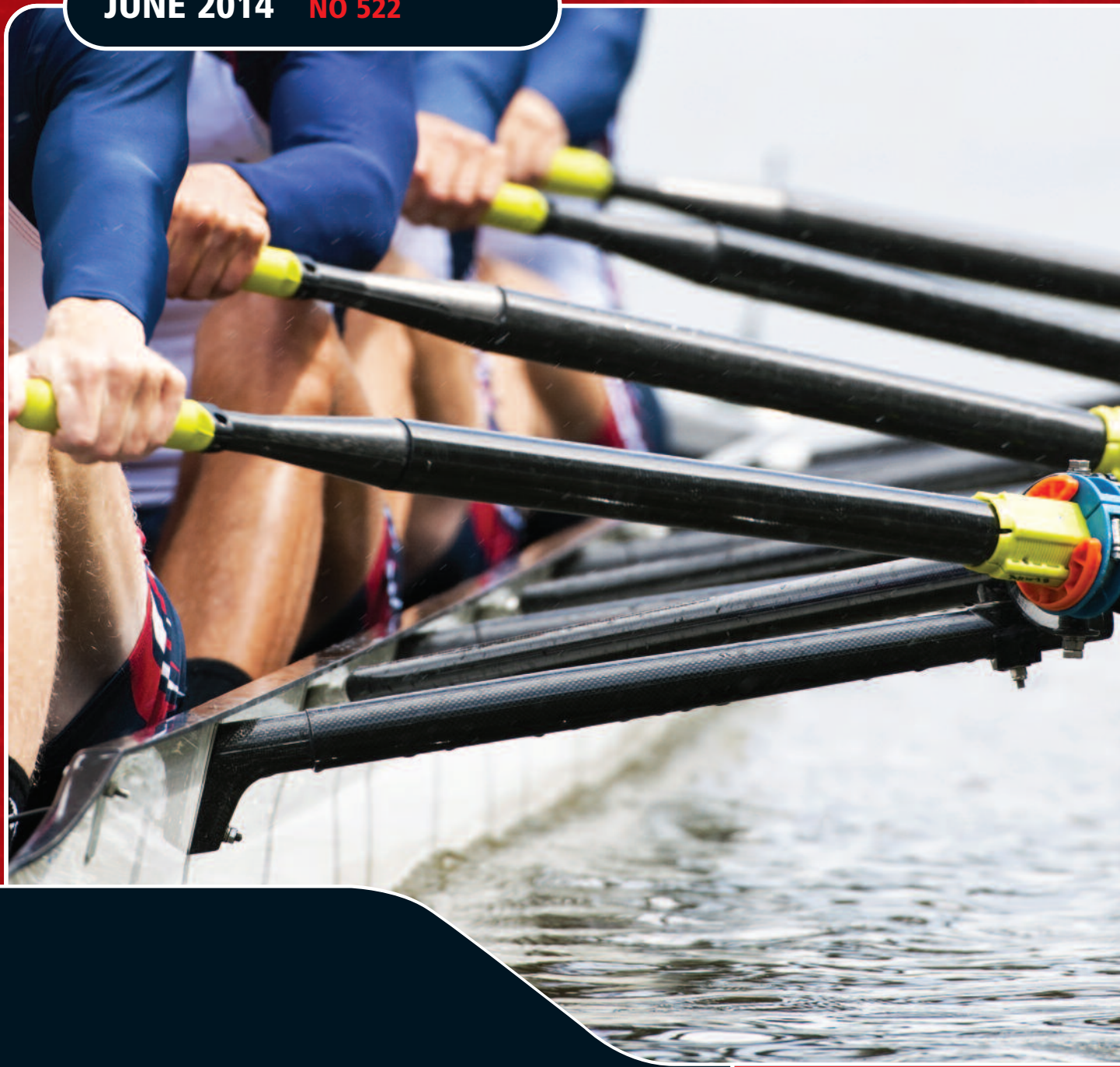
THE SCIENCE OF BETTER AT THE HEART OF ANALYTICS

INSIDE O.R.

JUNE 2014 NO 522



ROWING FOR GOLD

: : INSIDE THIS MONTH : : : : :

ON YER BIKE
NETWORKING - GIVING SERENDIPITY A HAND. WHY AND HOW.
DES OR SYD AT SW14
BUT IS IT 'SCIENCE'?

THE OR SOCIETY
DIAMOND JUBILEE
60 YEARS OF BETTER DECISIONS
1953 2013
www.theorsociety.com

EDITORIAL

JOHN CROCKER

KPIs, league tables, credit scoring and the like can be useful indicators of how well an organisation is performing but they are only indicators and very often not particularly accurate ones, at that. I am sure many, if not most of you have come across examples where those being monitored have found ingenious ways of beating the system. If you go to an A&E Department with anything other than a life-threatening problem you can expect to have a 239 minute wait – certainly no more, and in a good many cases, no less either. Why, because one of the KPIs for A&E departments is the percentage of people who are seen within 4 hours. There are GP surgeries where one can only make an appointment for the same day. At 8:30, when the receptionist gets in, everyone calls to try to get an appointment. If you are not one of the lucky ones to get an appointment that day then you have to go through the whole process again the next morning or drive to your nearest A&E to face a 239 minute wait. The surgery appears to have a 100% record of seeing all patients within 24 hours because, of course, the system does not record how many people tried, but failed to make an appointment. Humans seem to have an in-built ability for finding ways to beat the system!

Teaching and getting good exam results is another area in which the KPIs would appear not to be working as well as was hoped. Many schools are achieving very high scores in terms of numbers of pupils achieving high GCSE and GCE A-Level grades and yet universities and employers bemoan the low levels of ability in many subjects of those leaving school plus a general lack of preparedness for life after school.

Politicians seem to have this strange notion that if they change the system often enough it will, somehow, get better. (Unfortunately, politicians are not alone in this, company directors seem to be under much the same illusion.) In most cases, the person, at the top, who instigated the changes, has long since moved to a new position before it becomes blatantly obvious that it was all a case of smoke and mirrors thus setting up the perfect excuse for the new incumbent to introduce a new set of changes.

Louise Orpin has written about the latest changes to the 'A-Level' system that could have serious repercussions not just on the number of pupils taking mathematics but on the future of the UK economy. Within this issue, there is also an announcement about the next meeting to establish the Special Interest Group on Public Policy - there is still time to book your place on this FREE event.

The third annual Analytics Day was, by all accounts, a great success and you read all about it both in John Hopes' 'Leader' and Nigel Cummings' 'But is it Science?'. We have also had a look at two new books on Analytics.

Don't forget that with many of our articles there is a whole load more information available on our web site.

<OR>

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OR56 – THE OR SOCIETY ANNUAL CONFERENCE 2014 ROYAL HOLLOWAY, UNIVERSITY OF LONDON, 9-11 SEPTEMBER 2014

GILES HINDLE

Now is the time to send in your abstract for the OR Society's annual conference in September 2014. **The deadline for the submission of your abstract is 16 June 2014.**

Also, the deadline for the cheaper early bird registration fee is 30 June 2014. Visit the conference pages on the OR Society's website – **www.theorsociety.com/or56 – for full details of the conference, to submit a paper and to book online.**

See the Calls for Papers in this edition of *Inside O.R.* and the OR Society website for a full list of the **23 streams** we are running at the conference this year. Also, be aware of the Making an Impact day on Wednesday 10 September which enables networking and skills development for both practitioners and academics. We look forward to seeing you at Royal Holloway!

The plenary sessions at this year's conference are:

Stewart Robinson - Professor of Management Science and Associate Dean Research at Loughborough University, School of Business and Economics. *Twitter: @StewartRobinso1*

'We certainly live in an analytics society. So what does this mean for us as O.R. practitioners and academics? And what does it mean for the OR Society? In this talk I shall reflect upon my own analytics journey which started in around 2007. We shall ask 'what is analytics?' and trace its genesis. Is it just another fad or something that will stay? We shall finish by thinking about what this means for us, asking the greatest of all taboos: should we become the Analytics Society?'

Ursula Brennan - Permanent Secretary at the Ministry of Justice (MoJ) since July 2012. She is also Clerk of the Crown in Chancery.

Twitter: @mojubrennan

'Recently we have identified gaps in the ability of policy managers to understand and manage information. Our efforts to make better use of the Government's analytical teams, and to grow the data and analysis skills of the policy profession, have reinforced the importance of analytical thinking. This will be demonstrated through case studies of the use of Operational Research approaches, including problem structuring methods from national, sub-regional and local levels, which have helped analysts and policymakers to remain open-minded, to engage stakeholders and to consider the policy from multiple perspectives.'

Andrew Jennings - Senior Vice President and Chief Analytics Officer responsible for analytic strategy and analytic development at FICO.

'Retail banking was one of the very first industries to adopt analytics as a foundation of their operating mode. Today it is central to just about every decision and one of the best examples of a success story of the impact that analytics can have on a business.

In this talk I will demonstrate how pervasive the use of data and models have become to decision making and profitability describing current practice and also touching on some future developments'.

Plenary Panel

This year at OR56 we are very pleased to be hosting a Plenary Panel on Behavioural Operational Research which is chaired by Gilberto Montibeller from the London School of Economics.

Dr Gilberto Montibeller, LSE (chair), **Prof L. Alberto Franco,** Loughborough University, **Mr Phil Jones,** Dstl, **Prof David C. Lane**, Henley Business School, **Mrs Judith Rawle**, Head of O.R., CORDA and **Dr Geoff Royston**, Immediate Past President, The OR Society

'Emanating from the pioneering work of Tversky and Khaneman, 'Behavioural Decision Research' has made key contributions to the Decision Sciences in the last 40 years.

This stream of research has had a significant effect on Economics, Finance, and Public Policy, and helped to create the fields of Behavioural Economics, Behavioural Finance and Behavioural Public Policy.

This plenary panel will try to help shape a conceptual view of what 'Behavioural Operational Research' is, what it should be, and what its perspective can contribute to the theory and practice of O.R.'

WHEN TWEETING ABOUT OR56, PLEASE USE THE HASHTAG #OR56

04 : : : : : : : : IN BRIEF : :

MIT LGO program wins prestigious award

The MIT Leaders for Global Operations program has won the prestigious UPS George D. Smith Prize from INFORMS. The prize is awarded to an academic department or program for effective and innovative preparation of students to be good practitioners of O.R.

A first of its kind, MIT LGO was created to bring about a renaissance in manufacturing by developing analytically and technically sophisticated leaders to face the challenges of global competition. Since its inception, it has built an impressive track record. Starting with analytically oriented students, combining a core curriculum in O.R. with courses and exercises in leadership, teamwork, and global collaboration. The LGO alumni network ensures that the education of its students continues beyond graduation.

See http://tinyurl.com/n7z9fga for more details

Jet lagged no more?

A research team from the University of Michigan and Yale University has released a free iPhone app 'Entrain' that loads a complex, jet-lag conquering model into your smartphone. You type in your current location and destination as well as what kind of light you will have access to, and the app gives you a schedule of light exposure that should reset your internal clock in the most efficient way.

See: http://entrain.math.lsa.umich.edu/ for more details. If you're an iPhone user, this might be a useful download –an Android version is due shortly.

Analytics goes down the tube.

Steve Pears, the managing director of rail at Telent believes that health monitoring systems using Microsoft's Azure cloud platform will '… decrease laboursome on-site maintenance while streamlining the rail's day-to-day operations. It's all about looking at performance, seeing when it's starting to degrade and being able to take action.'

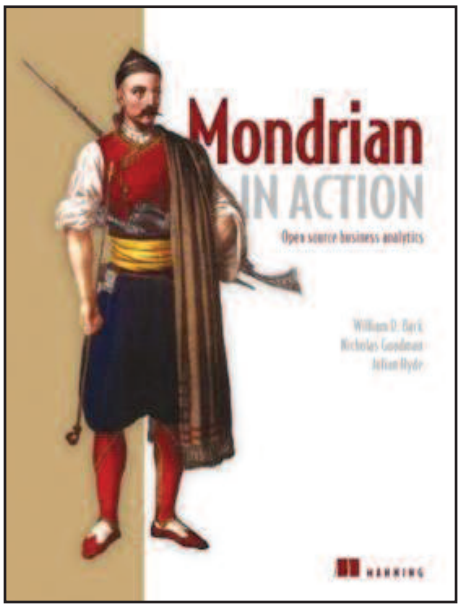
More information on:
http://bit.ly/1jYrfX4

Predictive Commerce

ORTEC, a winner of the Franz Edelman prize for 2012, has focussed its expertise on developing technology that helps companies boost their existing supply chain planning capabilities. In collaboration with ToolsGroup, the two companies are working on 'near real-time' decision making systems which cover demand through logistics optimisation. The result, driven by tried and tested O.R. practices, is a dynamic replenishment process that supports decision making based on reliable trade-offs to deliver the required customer service levels at least cost. ORTEC like to call their new technology, Predictive Commerce.

Mondrian Business Analytics

'Mondrian in Action, Open Source Business Analytics' is a book by William D Back, Nicholas Goodman, and Julian Hyde about Open Source Business Analytics aimed at analysts and developers. Mondrian is an



OLAP based data analysis tool that the authors claim can be used to analyse data, create reports and set up interactive analytics based systems on the 'cheap'.

The book is published by Manning, comprised of 288 Pages with ISBN 978-1617290985 and currently available in paperback through Amazon at £ 26.85.

Deloitte says:

Based on the responses from a sample of 421 executives, a study by Deloitte says organisations with superior supply chain capabilities achieve significantly higher levels of performance on both revenue growth and EBIT measures when compared to the industry average. Deloitte says that 79% of 'supply chain leaders' (versus 8% of 'supply chain followers') reported revenue growth that is considerably above the industry average. 69% (9%) have an EBIT margin that is 'well above the industry average'. 96% (65%) identified innovation as 'extremely important'. 48% (13%) are using 3D-printing extensively; 75% (30%) are using optimisation software; 67% (28%) use visualisation software; 75% (30%) mobile technologies and; 65% (27%) radio frequency id tags.

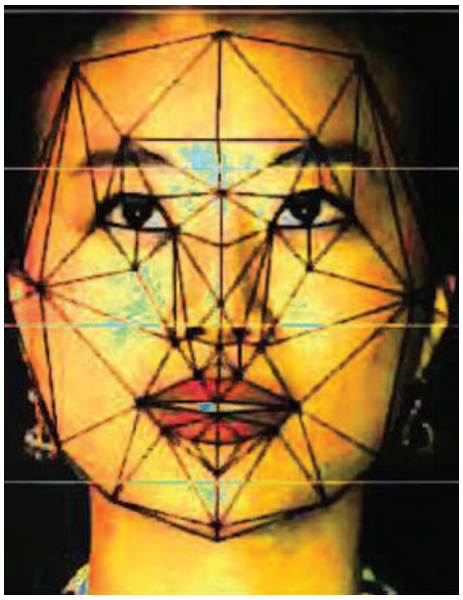
(EBIT: Earnings before interest and taxes.)

More information on:
http://tinyurl.com/lkneqwq

: : IN BRIEF: : : : : : :

If your face fits!

Using the 'eigenface' method, advertisers are likely to increase their sales by an average of 8% (and up to 15%) according to research carried out by Li Xiao (Fudan University, China) and Min Ding



(Pennsylvania State University). Given that over 50% of print ads contain human faces, an 8% increase in effectiveness could produce a substantial gain for the $600 billion ad industry according to Li Xiao.

Full paper available in 'Articles in Advance', INFORMS journal Marketing Science: http://tinyurl.com/mgsx2m8

Every cloud…

According to reports produced by Research and Marketing: Global Predictive Analytics is expected to grow at a CAGR of 30.19% (sic) between 2014 and 2018. Although cloud-based predictive analytics is starting to take hold, a lack of awareness could pose a challenge, according to the findings.

For further information: http://tinyurl.com/namvk4k

Tweet, Tweet!

Researchers at the University of Limerick have developed a mathematical model to examine how information gets re-tweeted with some 'surprising' results.

Have you thought about how a meme, or idea, spreads on Twitter? Researchers at the University of Limerick have. They have developed a mathematical model to test their theories and look at how information gets re-tweeted or passed around.

According to Prof James Gleeson , 'Most tweets are sent out once by the original person and are not re-tweeted, but… of the remainder, some are retweeted very many times, so you get a fat-tailed distribution with a peak at one tweet and then a tail that stretches out towards thousands of retweets.'

Prof Gleeson and his team working with a model with just a few basic assumptions about tweets and tweeters found they could achieve a similar distribution. Essentially, the only assumption necessary to generate a similarly shaped distribution is to assume users are busy and are only likely to respond to the latest tweet.

A more detailed report on the study, which received funding from Science Foundation Ireland and EU Framework Programme 7, is accessible from: www.arxiv.org.

Algorithm appointed to Board

Not to the Society's Board (I'm not sure it could cope with the in-depth discussions on the constitution), but to that of Deep Knowledge Ventures, a venture capital firm. The software, developed by UK-based firm Aging Analytics, will crunch through piles of big data to vote on whether the company will invest in specific companies or not. It deals with organisations developing drugs for age-related diseases and looks at financial data, clinical trial data, intellectual property and details of previous funding. Prof. Noel Sharkey, University of Sheffield said, "With financial markets, algorithms are delegated with decisions. The idea of the algorithm voting is a gimmick. It is not different from the algorithm making a suggestion and the board voting on it."

See http://bit.ly/1oHsz31 for more information.

Congratulations! IMA @50

The Institute of Maths & Its Applications is celebrating its 50th birthday during 2014. HRH The Princess Royal, the IMA's patron for the year, was the Guest of Honour at its recent celebration event at the Royal Society. Her Royal Highness gave a speech

and was presented with an Honorary Fellowship, following in the footsteps of her father, HRH The Duke of Edinburgh, who was the IMA's president in 1976-1977. She was then presented to selected guests, including Gavin Blackett, representing the OR Society.

Aspirin and chips to go!

Proteus Digital Health has created a pill containing a microchip which is activated when it comes into contact with the stomach's acids. This, they claim, can be used to monitor when patients take their medication and hence could help reduce the number of pills that are prescribed, dispensed but never get taken. These pills could also lead the way to monitoring the effectiveness of the medication and give a more accurate measure of the side-effects. The information is currently transmitted from the pill to a patch worn by the patient which records the sensor's number and the time the pill was detected. The patch can also collect various other useful information such as skin temperature, activity levels, sleep patterns, etc.

ON YER BIKE

NIGEL CUMMINGS

Whilst enjoying the warm Spring sun and doing a spot of long overdue gardening I couldn't help but listen to the strains of Katie Melua's 'Nine million bicycles' being broadcast by my local radio station.

The first three lines of that song were:

'There are nine million bicycles in Beijing
That's a fact,
It's a thing we can't deny'

Dr. I-Lin Wang, Associate Professor at Department of Industrial & Information Management, National Cheng Kung University (NCKU), southern Taiwan, has been working with researchers from Singapore and China to explore the decision-making in public bike sharing systems. How many bikes and racks should be provided and where should they be located to meet the demands throughout the day.

Wang started his O.R. oriented investigation on bike sharing related research topics in 2008. He has advised six masters' theses conducting bike sharing related research and he has won six awards. In 2010, he invited Prof. Chun Piao Teo from the National University of Singapore to visit NCKU for one week, in which time they focused on investigating bike sharing related topics.

Later, Prof. Teo invited his colleagues and former students to a larger team and co-authored a paper called 'Models for Effective Deployment and Redistribution of Bicycles within Public Bicycle-Sharing Systems' which was published in the INFORMS Journal, 'Operations Research,' in November 2013.

The paper illustrated mathematical models which could be used to formulate the network design and management problems for a bike sharing system.

Incidentally Katie Melua's song may already be out of date with regard to the number of bicycles in Beijing. Since the introduction of electronic bicycles, the Chinese have adopted even wider bicycle usage habits across their country. Indeed, it may soon become a rarity to see any 'man-powered' bicycles on Beijing Roads.

For more information see:
http://pubsonline.informs.org/doi/abs/10.1287/opre.2013.1215 and

http://bschool.nus.edu/Staff/bizteocp/BS2010.pdf

<OR>

CONFERENCE NEWS

EVENT:	OR56 Annual Conference	**DATE:**	9 – 11 September 2014	**VENUE:**	Royal Holloway University of London, Egham.
EVENT:	EURO2015	**DATE:**	12 (welcome), 13 – 15 July 2015	**VENUE:**	University of Strathclyde, Glasgow

BECOME A PRO BONO O.R. VOLUNTEER

FELICITY MCLEISTER

Pro Bono O.R. not only makes a difference to the organisations that receive the support, there are a huge number of benefits to those who give up their time to provide the support.

This is what some of our volunteers have to say:

Sue Merchant

'It's a chance to make a difference, practice getting to the heart of a problem quickly, meet some very dedicated people and use techniques which you might not in your every day job'

Sam MacKay

'Being a volunteer was a great way to make a real difference for an organisation with people that were clearly passionate about what they do. At the same time I've added some interesting people to my network and expanded the breadth of projects I've undertaken on my CV'

Ian Seath

'Working as a pro bono volunteer is a great way to contribute some professional expertise to some truly worthwhile causes. The Third Sector is full of people who feel passionately about their Mission, so working with them is invariably a positive learning experience'

Jane Parkin

'I've really enjoyed working with Third Sector organisations and found the staff extremely positive about the contribution we make'

Huw Evans

'Working on pro bono assignments has provided opportunities to work with a variety of organisations, some of whom have never worked with a consultant because they felt it wasn't an option open to them because of expense. The variety of organisations has provided wider experience of the Third Sector and enabled me to develop approaches that were capacity building for the organisations (opening up their minds to new ideas, approaches, insights and possibilities) as well as enriching my experience with opportunities to enhance my CV. The pro bono approach can be attractive to retired O.R. practitioners in that it allows you to pick and choose assignments and continue to apply your experience and skills usefully in society. I'd recommend pro bono opportunities as a way of developing practice, raising the profile of O.R., enhancing your CV, having fun meeting people in different organisations working with limited resources to do good things'

Requirements to become of volunteer:

- Member of The OR Society or,
- Studying in HE and with Tutor endorsement for the project? or,
- Min 1st degree in O.R. related subject? or,
- Practitioner with a track record? or,
- The OR Society accreditation? or,
- Part of the O.R. Community

If you are interested in receiving Pro Bono O.R. support, becoming a volunteer or just want to find out more information, please write to felicity.mcleister@theorsociety.com

@FMcLeister

Felicity McLeister

Pro bono blog: http://probonoor.blogspot.co.uk/

Pro bono webpage:
http://www.theorsociety.com/Pages/Probono/Probono.aspx

<OR>

MAKE SURE YOUR CONTACT DETAILS ARE UP-TO-DATE

Contact Carol Smith
carol.smith@theorsociety.com
or go online to www.theorsociety.com
log on and click 'My Contact Details'

OR56 ANNUAL CONFERENCE ROYAL HOLLOWAY UNIVERSITY OF LONDON, 9 – 11 SEPT 2014

HILARY WILKES

CALL FOR PAPERS

The OR56 Committee are calling for further supplies of interesting, informative and challenging papers from academics, practitioners, researchers and students with interests in any aspect of Operational Research. So please submit your title and abstract now via **www.theorsociety.com/OR56** and come along to present your work at Royal Holloway.

We have some great Keynote speakers already in place but if your stream does not yet have one, please hurry and get in touch with your contacts to find a good speaker to support your stream. A Keynote paper or an Extended Abstract is expected to present a state of the art review of an area and discuss future directions for research in the field. Keynote papers and Extended Abstracts will be highlighted in the Conference Programme and will be allocated additional time in the Schedule if required. You do not have to produce a full paper, however, if you do and if accepted, it will be published in the Keynote Papers and Extended Abstracts Handbook and referenced with an ISB number.

To help those presenting a talk, our extended title and abstract submission deadline is 16 June 2014. Please now see the **important deadlines** below, (which may be subject to slight change.)

30 May 2014	Deadline for submission of full Keynote Papers and Extended Abstracts.
16 June 2014	Extended deadline for submission of titles and abstracts online in time to appear in the Conference Programme.
20 June 2014	Notification of Acceptance to be sent re Keynote Papers and Extended Abstracts.
30 June 2014	Deadline for submission of Keynote and Extended Abstract camera ready copy.
30 June 2014	Deadline for early reduced registration fee.
02 July 2014	Deadline for final revision of abstracts. Normally abstracts are submitted at the same time as the paper title, but there is scope for presenters to make changes up to this date.
18 July 2014	Deadline for Registration if the abstract or paper is to be scheduled for presentation. Thereby ensuring their talk will appear in the final programme. At least one author per presentation must book and pay for a place at the conference by 18 July 2014. The conference committee reserve the right to exclude papers if bookings are not made by this date.

Streams and Stream Organisers.

Below is a list of the streams which are already confirmed for this year's conference. There is a wide variety covering many different areas of OR, however, if you cannot see a stream into which your paper naturally sits please contact us as, with sufficient interest, we may be able to consider starting an additional stream.

Use our website www.theorsociety.com/OR56 for more details or contact the stream organiser for help.

Analytics
- Nigel Phillips - phillinp@lsbu.ac.uk

Behavioural Operational Research
- Sally Brailsford - s.c.brailsford@soton.ac.uk

Community OR: Collective challenges and Open systems
- Martha Vahl - martha@cict.demon.co.uk and Eliseo L. Vilalta-Perdomo - evilaltaperdomo@lincoln.ac.uk

Data Envelopment Analysis – DEA
- Bing Xu - B.Xu@hw.ac.uk, Jamal Ouenniche - Jamal.Ouenniche@ed.ac.uk and Sadia Farooq - phd10sf@mail.wbs.ac.uk

Energy
- Prasanta Dey - p.k.dey@aston.ac.uk and Kostas Petridis - costas.e.petridis@gmail.com

Forecasting
- Sven F. Crone - s.crone@lancaster.ac.uk

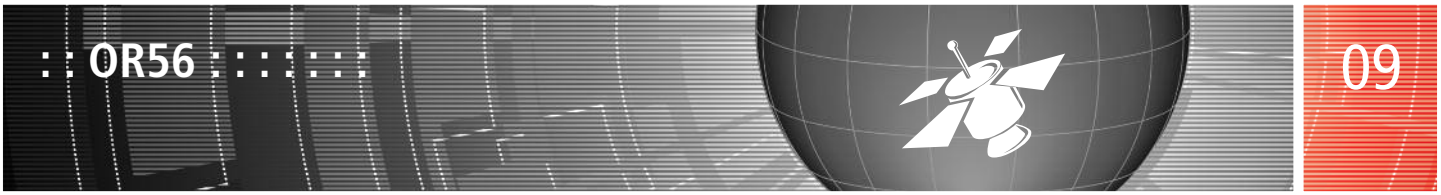
Game Theory
- Dr Aristotelis Boukouras - aris.boukouras@ed.ac.uk

Health
- Kirandeep Chahal - kirandeep_chahal@hotmail.co.uk, Navonil Mustafee - n.mustafee@exeter.ac.uk, Lampros Stergoulias - lampros.stergioulas@brunel.ac.uk and Lisa Butland - Lisa.butland@nhs.net

Infrastructure
- Fuzhan Nasiri - f.nasiri@ucl.ac.uk and Andy Chow - ho.chow@ucl.ac.uk

Inventory Research
- Mohamed Zied Babai - mohamed-zied.babai@bem.edu

Metaheuristics
- Ender Ozcan - exo@cs.nott.ac.uk and Andrew Parkes - ajp@Cs.Nott.ac.uk



O.R. & Public Policy
- Rob Solly - rcsolly@dstl.gov.uk

OR Consultancy & Case Studies
- John Medhurst - john@larrainzar.co.uk

OR In Sport
- Philip Scarf - p.a.Scarf@salford.ac.uk

Problem Structuring
- Amanda Gregory - a.j.gregory@hull.ac.uk and Alberto Paucar-Caceres - a.paucar@mmu.ac.uk

Project Management
- Gary Bell - g.bell@lsbu.ac.uk, Rosane Pagano - R.Pagano@mmu.ac.uk and Jon Warwick - Warwick@lsbu.ac.uk

Queue Modelling
- Navid Izady - N.Izady@soton.ac.uk

Routing Applications and Transport
- Jamal Ouenniche - Jamal.Ouenniche@ed.ac.uk and Daniel Karapetyan - dxk@cs.nott.ac.uk

Scheduling
- Djamila Ouelhadj - djamila.ouelhadj@port.ac.uk

Simulation
- Thomas Monks - t.monks@exeter.ac.uk

Strategy Analytics
- Frances O'Brien - frances.o-brien@wbs.ac.uk and Martin Kunc - Martin.Kunc@wbs.ac.uk

Sustainable Supply Chain
- Fereshteh Mafakheri - f.mafakheri@greenwich.ac.uk and Lampros Stergioulas - Lampros.Stergioulas@brunel.ac.uk

Third Sector OR: modelling for a better world
- John Holt - jholt@danielholt1992.com and Simon Pegg - simonpegg@holleth.myzen.co.uk

We look forward to seeing you at Royal Holloway.

<OR>

LIFE!

NIGEL CUMMINGS

Ecologists, biologists and environmental scientists at Microsoft Research and the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), have spent three years developing the world's first 'General Ecosystem Model', or GEM, a model that simulates all life on Earth (land and oceans).

This 'ultimate' world simulation is called the 'Madingley Model', and the software behind it has been released as 'Open-Source' to encourage more scientists to get involved. The Madingley model (named after a village in Cambridgeshire) is capable of capturing and depicting the broad structure and function of ecosystems around the world. It achieves this by simulating processes such as feeding, reproduction and death, which drive the distribution of creatures.

The model is now able to reproduce characteristics of the ecosystems that we see in the real world, from the small-scale (how long do small mammals live?), to the large (do more productive ecosystems support more herbivores?). The model also makes new, testable predictions about how ecological interactions among individual organisms shape the natural world that surrounds us.

The model uses real data on carbon flows as a starting point. From the relationship between the mass of individual organisms and how long they live, to the distribution of biomass across Earth, the model's outputs appear to be consistent with current understanding of ecosystems.

The Madingley Model could help address key environmental issues and possibly show the potential effects of different actions on the environment.

A website devoted to the Madingley Model can be located at: http://www.madingleymodel.org/

<OR>

THE OR SOCIETY

Training for 2014

Approved courses in O.R. and Analytics

BENCHMARKING: BEYOND METRICS – HOW TO ACHIEVE STEP CHANGE

3 June, Birmingham
£445 + VAT for OR Society members
Course provider:
Ian Seath, Improvement Skills Consulting

Discover how benchmarks and benchmarking differ and when you should and should not use benchmarking. Understand how to decide which of the four types of benchmarking is most appropriate and how to plan and manage a benchmarking project using step-by-step processes. Learn how to ensure that benchmarking solutions are 'best in class'.

See why organisations need to go beyond 'metrics' benchmarking to drive step changes; A practical approach for planning and managing benchmark projects; Practise planning for key stages in a benchmarking project and identify how 'process' and 'organisational' factors can be used to identify best practice

DATA PRESENTATION FOR ANALYSTS

4 June, Birmingham
£565 + VAT for OR Society members
Hands on course
NEW FOR 2014
Course provider:
Greg McCormick, SMCD Training

This course is for analysts and technical specialists who present or report on numerical or graphical information to non-specialists. We'll cover best-practice for constructing and presenting short tables and simple graphs and the role of formatting, layout, rounding and aggregation. You'll also get plenty of hints on narrative – what works and what doesn't. You'll learn how to:

Present data to management and non-professionals in a focussed, concise and understandable way; Increase your impact and credibility to make your work more likely to be acted on; Make your work more widely accessible to the rest of your organisation; Start to consider your audiences more systematically

DATA MINING: TECHNIQUES AND APPLICATIONS

10 June, Birmingham
£665 + VAT for OR Society members
Hands on course
Course provider:
Bart Baesens and David Martens

Gain an overview of the data mining process and learn about predictive analyses such as regression and classification. Build your own decision models and see how to use data mining techniques in a range of applications such as marketing, finance and the public sector.

Develop predictive models using classification and regression, Decision trees, Logistic regression, Artificial Neural Networks; Evaluate predictive models; applications in marketing, finance and risk management. Develop descriptive models using clustering and association rules; Apriori algorithm, k-means clustering; Lab exercises with Weka

DATA MINING: ADVANCED DATA MINING

11 June, Birmingham
£665 + VAT for OR Society members
Hands on course
NEW FOR 2014
Course provider:
Bart Baesens and David Martens

Developing skills learnt from the Techniques and Applications course [see above]

State-of-the-art techniques in data mining: Support Vector Machines; Bayesian Networks; Rule Extraction; Text Mining Recommender Systems; Social Network Analysis (SNA): Principles of SNA; Mining Networked data; Applications in advertising, fraud detection and customer analytics; Big Data: Principles of Big Data; The mapReduce paradigm; Mining Big Data; Applications in government and marketing; The Black Swan

ESSENTIAL FINANCIAL MODELLING IN EXCEL

17-19 June, Birmingham
£1,560 + VAT for OR Society members
Hands on course
Course provider: Stephen Coe

Gain hands-on experience of building more advanced financial models; combining techniques and features to build more usable models; importance of modular design and design methodology; how to solve business problems through spreadsheet modelling and add risk analysis and optimisation to existing models.

Introducing risk techniques and a single point project model; limitations; data tables and multiple answers; scenarios; Further risk techniques: standard deviation; coefficient of variation; project deviation; certainty equivalents; options approach and probabilities; Simulation and decision tree models: Setting up the model; Optimisation and targeting: adding goal seek and solver to the risk model

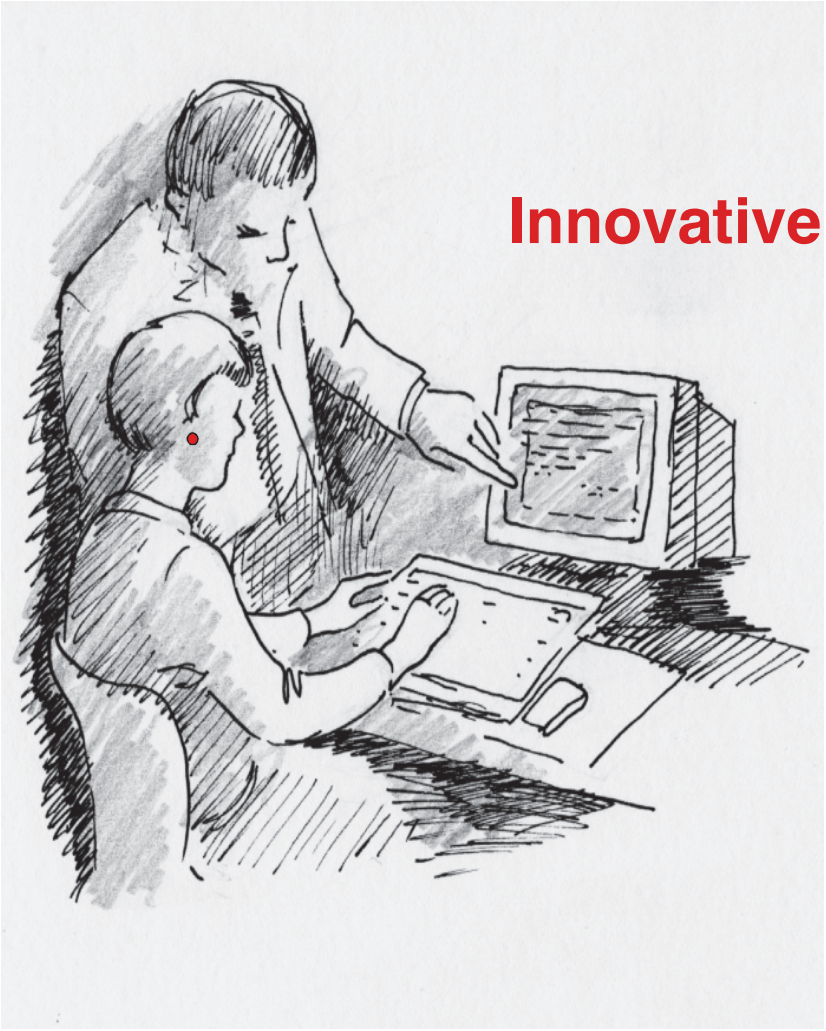
DECISION AND RISK ANALYSIS

24 June, Birmingham
£590 + VAT for OR Society members
Hands on course
Course providers:
Jian-bo Yang and Dong Ling Xu

The course will teach you how to model, analyse and manage the effects of various types of uncertainty that co-exist in decision problems. The training introduces a new and advanced approach to Multiple Criteria Decision Analysis (MCDA) under uncertainty and provides hands-on experience of the latest MCDA software tools.

Acquire up to date knowledge in decision sciences and MCDA; enhance your decision making skills under uncertainty in your workplace; learn to save time, increase accuracy and consistency in decision making and communications; network and share experiences with other decision-making professionals

For details of all courses and to book online, visit www.theorsociety.com or call Jennie Phelps on 0121 234 7818



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- **Impact Explorer™** - a voting, ranking and matrix assessment tool. Groups use radio based handsets coupled with the Impact Explorer software to register their opinions or cast votes on the subject being discussed. The system supports up to 250 participants. Cost depends on the handsets being used. Prices start from as low as 31 GBP + VAT per handset. Handsets can be purchased in any quantity. Accompanying software license starts from £395 + VAT. System requires both hardware and software.

- **Interwrite™ Response** - a classroom response system. Using radio frequency or infra-red handsets, students respond to questions presented in PowerPoint, the internal question editor, or to impromptu questions asked verbally. The system can support thousands of students. Cost depends on the handsets being used. Prices start from as low as 31 GBP + VAT per handset. Accompanying software is included with the receiver kit, cost depends on the system being used. Discounts available for volume purchases of handsets.

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Places are filling up for the Careers Open Day exhibition.

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datatech analytics
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Wednesday 19 November 2014

Early Bird booking - Reserve a stand by 30 June 2014 for £280 +VAT
(£320 + VAT thereafter)

Price includes lunch and refreshments, monthly feature in Inside O.R. up to the event and a follow up article, and a profile on our website.
Confirmed exhibitors will be promoted to students prior to the event.

To reserve a stand please email Louise Orpin, louise.orpin@theorsociety.com

Find out more online at www.theorsociety.com/CareersOpenDay

ASSISTED PLACES: OR56, ROYAL HOLLOWAY, UNIVERSITY OF LONDON, 9 – 11 SEPTEMBER 2014

GAVIN BLACKETT, SECRETARY & GENERAL MANAGER

The OR Society's annual conference is an important event in delivering its charitable aims as it has the potential to reach a large number of both members and non-members.

Even though the Society aims only to break even in running the Conference, the price of registration and accommodation taken together with travel costs can soon mount up. Practitioners from larger organisations tend to get conference places paid for by their employers, whilst many academics have conference budgets to cover their attendance at events such as this. There are, however, a number of potential attendees for whom the conference costs can represent a significant barrier. These potential attendees would not only benefit personally from attendance, but the conference itself and the wider O.R. community could gain value. This is where the Society's Assisted Places Scheme comes in.

So, the next step is up to you! Successful applicants will have their registration and accommodation charges fully funded*, thereby gaining the opportunity to present their work and network with experts in the field.

Applicants are invited to submit a proposal for funding via email to Gavin Blackett, Secretary & General Manager (gavin.blackett@theorsociety.com) **before the deadline of 30th June 2014**. Successful candidates will be informed of the awards in July.

* Successful applicants are liable for their own travel and incidental expenses.

<OR>

WANT TO RUN AN OR SOCIETY TRAINING COURSES IN 2015?

GAVIN BLACKETT, SECRETARY & GENERAL MANAGER

The OR Society's Training Working Group invites bids to provide training courses in 2015. All offers of courses will be considered, though there is no guarantee of acceptance.

For 2015, courses in the following areas are particularly encouraged:

- 'New' areas - help us keep the OR community fresh in its thinking;
- Courses relevant to analytics;
- Practical courses relevant to the issues of the day – doing more with less, efficiencies, reducing waste and duplication;
- Advanced courses in more traditional areas, which start from MSc level and take the subject to a specialist level; and
- Courses given by practitioners or those with a good practical knowledge of the subject.

Closing date for the receipt of bids is **30 May 2014**. Bidders will be notified of the outcome at the beginning of July. Get in touch with Jennie Phelps on 0121 234 7818

<OR>

TRY, TRY AND TRY AGAIN!

BEN LUDFORD

SWORDS recently organised a seminar covering how Information Visualisation is being used by Performance Analysts to inform them on the game of Rugby Union. Rhodri Brown; a performance analyst for the Welsh Rugby Union (WRU) gave background on the analysis that is completed at the elite level.

There are three main categories:

1. Training analysis – sessions are filmed so that footage can be studied.

2. Opposition scouting – looking for themes and weaknesses to create strategies for the squad. (4 of the 7 tries that Wales scored against Scotland in the 6 nations used these strategies.)

3. Match analysis – checking if the opposition is playing as predicted and working out ways to adapt strategies if required. This was the focus of the session.

For data to be available during a match, a team of analysts manually and probably frantically input information. After a Wales game, further data is entered and 600 metrics on team and individual performance are calculated. Research is looking into ways to automate this collection.

Presenting this data can prove a challenge. Amalgamating to match level misses detail as the result of one action can lead to a 14 point swing. Therefore the metrics need to be much more detailed with respect to time. On the other hand, coaches also worry about detail taking over, and losing sight of the big picture.

This is where Matthew Parry and SportsViz come in, who provide the software used by the WRU. The software takes the data that is input during the match from the analyst's laptops every 10 seconds for use by the coaches. They look at either a selection of statistics covering whatever period of the game they choose, or a detailed timeline of the match in a clever bit of data visualisation. This timeline shows a series of 'glyphs' that represent each event and provide detail on it, e.g. type, duration, location and result. These glyphs can be selected to see the video of the event. The background of the timeline holds information about the phases of play, each represented as a bar where colour is the team in possession, height is the distance gained and width is the duration. This was an excellent example of the benefit of representing data in the way of most use to the actual user.

Rhodri had also mentioned that there is the need to analyse chains of events or pairs of metrics changing together as this is where the big effects on the game can be identified. This is currently done by the eye of the rugby expert. Rhodri asked for ideas and suggestions to assist in this task and also in where predictive analysis could be applied to forecast events which highlighted the fact that this industry is still embryonic in its exploration of O.R. applications.

I will leave you with a quote from Rhodri regarding his team of performance analysts: 'we are a small department but we like to think we punch well above our weight'. It is a sentence that may sound familiar and signifies rather well the value of O.R.

<OR>

SPECIAL INTEREST GROUPS

Contact details for all special interest groups and meetings past and present are listed at:

http://www.theorsociety.com/Pages/SpecialInterest/SpecialInterestList.aspx

NETWORKING – GIVING SERENDIPITY A HAND. WHY AND HOW.

RUTH KAUFMAN AND RAMUNE GEDGAUDAITE

Since Donald Rumsfield explained why invading Iraq was not a stupid idea, we have all been familiar with the notion of 'unknown unknowns'.

But unless you are a cutting edge life scientist, there is really no such thing. Sure, there are lots of things each one of us doesn't know that we don't know. But *somebody* knows them. And that is why networking is such a wonderful thing.

Are you planning to migrate to a software platform you've never worked with before? You can ask questions of the distributors – but there may be all sorts of things you don't know to ask. But if you talk to somebody who has used it or, better, has recently migrated to it, you can learn all sorts of things you didn't know you didn't know. The same goes for new techniques, new application areas, jobs in new fields…without talking to people who've been there themselves, you are missing out on one of the most vital sources (and in some case, the only possible source) of information.

Networking as information exchange is not only essential to developing good professional practice, it is also an activity where we can all be givers. Generosity with one's own knowledge is the mark of a good professional.

Many people prefer to build their networks through serendipitous encounters. They are put off systematic networking by the idea that networking leads to 'using' people for your own ends, or that it is to help the sharp-elbowed gain advantage. So it can; but it can be so much more universal, and reciprocal than that. What's more, it can also be fun.

The speed networking session at the 'Making an Impact' practitioners' stream at OR56 is the perfect occasion to see how this works. It is designed so that even the shyest of us can join in without embarrassment, and the outcome is an immediate boost to the number of people you may be able to turn to in the future – or who may be able to turn to you.

What makes the speed networking so exciting is the chance to let people know enough about you in a very limited time and evoke their interest. One of the ways to do this is to have an *elevator pitch* ready.

Whether you are an analyst trying to pitch your idea, or a consultant trying to land another piece of work, a head of department constantly trying to get your budget approved or increased or an O.R. professional looking for people you could learn from or who could learn from you – what would you say if you meet your CEO, a client you have been yearning to work with, or an expert in the very field you are trying to study?

The 'elevator pitch'

So imagine you are in an elevator, and have 30 to 60 seconds to leave an impression by providing enough information to be invited for the next conversation. Start with a 'pain statement' i.e. a problem that you are trying to solve. Next, state what your value proposition is and how what you do solves that problem. Lastly, be clear on what you are looking for. Keep it short. Have a hook. Pitch yourself, not only your ideas. Practise.

Have your perfect elevator pitch ready for to gain new insights, expand your professional network, catch up with O.R. colleagues and last, but definitely not least, to have fun!

<OR>

OR Fifty-six
Royal Holloway 2014

9-11 September 2014
Royal Holloway, University of London

Practitioners' Stream:
'Making an Impact'
Wednesday 10 September

O.R.-NOW

JOHN CROCKER

How do you solve a problem…?

Most academic courses in simulation and systems dynamics will tell you that you must start with a conceptual model. Yet recent research has suggested that few practitioners do so. When I was at university, my lecturer in 'Computing' insisted that one should always draw a flow diagram before writing a program. Later, I was similarly told that one could not (or should not) develop a simulation model until one had drawn an entity-cycle or activity-cycle diagram. Having developed several simulation models over the past 40 years, the only time I have ever drawn such a diagram has been after the event as part of the supporting documentation but, in all honesty, I think they are more trouble than they are worth in this context as it extremely tedious trying to keep them up-to-date. It was therefore with much interest that I read the paper by Ahmed and Robinson[i].

Although their findings are based on a small sample (20) their methods suggest they have gone to great lengths to ensure that this sample is reasonably representative and as far as possible, unbiased. Unlike most surveys of this type, the researchers have chosen to consider actual projects and real models. Given the categories of small, medium and large models of low, medium and high complexity using DES or SD carried out by researchers, consultants or research consultants it is not surprising that some of the cells are empty. Nonetheless, there seems to be a general consensus that modellers go through three phases when developing a model: problem definition; model development and; model usage.

Unfortunately, there appears to be a very wide range of terms used by the cohort. Whilst this meant that they were not influenced during the interviews, it does make it a bit difficult to determine whether some of these are simply synonyms or have quite different meanings. It is particularly interesting to note that of the 35 terms used, only one viz 'construction/implementation' was cited by all although only one failed to mention 'model verification' and 'model validation'. This too, is interesting, as it has been said that it is impossible to validate a simulation model which again suggests that the terms used could be open to interpretation.

A number of the sample felt that simulation modelling, in particular, was probably best done by individuals (a view with which I would concur). I would also suggest that models written by individuals are easier to maintain and support – different programmers tend to use different styles and conventions which can cause confusion.

This is a most interesting insight into the minds and workings of both practitioners and academics working in this field. It also happens to be a easy and enjoyable read – it must be one of the few papers I have read from start to finish in one go (without even falling asleep).

It would be fascinating to hear from those of you who have written simulation and/or systems dynamics models (and who were not one of the chosen few) about your own experiences in terms of how you tackle such problems.

[i] Ahmed, R. and S Robinson, 2014, Modelling and simulation in business and industry – insights into the processes and practices of expert modellers, *JORS* **65**.5 Pp 660-672

<OR>

WHERE ARE THEY NOW?

The following members on the Society's mailing list have recently had their mail returned to the Membership section, presumably because they have changed their address.

Would any member who is currently in touch with them please ask them to email Carol.Smith@theorsociety.com advising us of their current whereabouts so that we can update our database and return to a speedy and efficient service.

Prof Mounir Kehal	France	Mr Zhong Yu	Lancaster

<OR>

CAREERS OPEN DAY 2014

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Wednesday 19 November 2014 10am to 4pm

Find out more and reserve your FREE place online at www.TheORSociety.com/CareersOpenDay

REGIONAL SOCIETIES

Contact details for all regional societies and meetings past and present are listed at:

http://www.theorsociety.com/Pages/Regional/RegionalList.aspx

ANALYTICS MUNGING

JOHN HOPES VICE PRESIDENT

'Fortunately our attendance did the location proud and we exceeded the previous two year's numbers with over 170 in the audience, split fairly evenly I believe between OR Society members and non-members.'

It is always good to learn a new word, and at our third one day event on Developments in Advanced Analytics and Big Data I learnt a new word in the first session from Sayara Beg (Chair of the OR Society Analytics Network), and that word was 'munging'. It turns out that this is something I have done myself on a number of occasions, without even realising it.

Sayara also challenged us with the analytics equivalent of the chicken and egg question: Which comes first – the data or the question? The audience voted in favour of the question coming first, but our second speaker, Sir Mark Walport (Government Chief Scientific Adviser), explained that this was an example of a false dichotomy and that data can just as easily give rise to questions as part of a circular process.

This year's event was at a new location for us, the British Medical Association's headquarters (BMA House), with the main sessions being held in a vast, bright, airy hall. Fortunately our attendance did the location proud and we exceeded the previous two year's numbers with over 170 in the audience, split fairly evenly I believe between OR Society members and non-members. This was all the more impressive because the tube strike was inconveniently held on the same day as our event. It seems that people will struggle through any challenge to hear the latest on analytics.

On reflection I think the credit, both for the level of attendance and the positive feedback I picked up from all those I spoke to, should go to John Ranyard for having organised such an impressive group of speakers. It was a very well-balanced programme, covering public and private sector, consultants as well as in-house analytics teams and academia. And, from a technical perspective, it spanned O.R., statistics and artificial intelligence. Given the location, John even managed rather cleverly to arrange to have speakers on the bill who are specialists in healthcare analytics. Con Ariti from Nuffield Trust gave an interesting talk on how predictive analytics can target more effective medical interventions. Sir Mark gave the example of how regular data collection from Scottish diabetic sufferers and its analysis has led to a 40% reduction in limb amputations and eyesight loss. And Don Kleinmuntz (President of the INFORMS analytics section) explained the potential for future healthcare analytics applications in 'optimisation-enabled decisions and resource allocation models' and 'data-informed forecasting and risk analysis'. Interestingly, from an O.R. perspective, Don also commented on how there was next to nothing on optimisation at a major healthcare analytics conference he attended recently.

As well as having healthcare representation for the first time, we also had more speakers whose background was statistics instead of O.R. In addition to Con and Don (which sounds like a comedy

double act), we also had Dan Kellett from Capital One who gave some interesting insights into how the statistical modelling process can be greatly speeded up. In addition, the RSS had a representative in the audience who seemed very impressed by how far the OR Society had come with analytics and is keen to explore joint events and initiatives in the space – which is something I am sure we should follow-up on.

In other sessions Arne Strauss from Warwick showed how learning from the airlines sector can be deployed to good effect in retail, and Russell Hodge demonstrated the huge benefits gained from improving the quality of insight throughout the asset management process at Network Rail.

One of the themes that ran through the day was that of data privacy. Sir Mark introduced the concept of the myth of consent, pointing out that there is more text in the terms and conditions on some websites than there is in Hamlet or Macbeth. As a result we all just tend to tick without reading. This issue was further highlighted during the presentation from Alan Hambrook of Zoral Labs when he explained how online lending decisions were informed by such data as your number of friends and likes frequency on Facebook, the difference between your real age and what you admit to on Facebook, how long it takes you to enter your details and your relative preference for mouse or tab key. Taking account of all these and other factors has not only reduced fraud, but has also increased acceptance rates.

Moving on to the role of O.R. (and the OR Society) in analytics, Sir Mark issued some challenges to us: to contribute more to analytics research and innovation; to ensure that O.R. analysts are equipped with both analytical and coding skills; and to become more plugged in to Big Data. In particular, he felt there could be a role for us in the recently launched Alan Turing Institute. Also, given the shortage of quantitative skills that was raised by many of the speakers, collaboration between disciplines was going to be essential.

Don Kleinmuntz also dealt with the relationship between O.R. and analytics, emphasising that it was a two way street, in that analytics practice can benefit from O.R. knowledge and experience, while O.R. can benefit for the interest in and enthusiasm for analytics. Given that there are hundreds of times more Google searches for the term 'analytics' than there are for any version of 'O.R.' it makes sense for O.R. to share in the high profile of analytics. Don also quoted Anne Robinson (another past President of INFORMS), 'Analytics doesn't take anything away from O.R. Outside our community O.R. is seen as a toolkit but analytics is seen as a process'.

In terms of the INFORMS experience with analytics, in many ways this has mirrored our own, although they have undoubtedly been ahead of us in reacting to the opportunity. For example, the INFORMS analytics section is, relative to the overall size of the Society and the market it serves, similar in size to our own analytics network. Where they have had great success, though, has been in growing their practitioners' conference by branding it 'analytics'. Replicating this is more of a challenge for us as we don't want to undermine our main conference.

The other area where INFORMS have done something different to us has been in introducing the Certified Analytics Professional (CAP) accreditation. It is early days for this, but if it does meet an unmet need for a professional qualification for the wider analytics community, then it could be transformational for INFORMS. There is a view here that the OR Society could meet the same need by offering chartered scientist, but other possibilities would be to offer the INFORMS certification or a UK version.

Overall, as Tony O'Connor observed in the final panel session, we have come a long way from our first one day event two years ago in terms of O.R. and OR Society engagement with analytics. There is still much further we can go, but the momentum is undoubtedly there.

<OR>

NEWS OF MEMBERS

The Society welcomes the following new members,
SUDHA BHARATAN, Crawley; Eli YECHEZKIEL KLING, Aylesbury; MARCO LUEBBECKE, Germany; ANGELOS OIKONOMOPOULOS, London; MATTHEW POLLARD, London; JONATHAN PUDDICOMBE, Southampton;

and Reinstated members,
EMMANUEL ADAMIDES, Greece;

and the following student members,
CHEN LI, Cardiff; LIINGCHEN MENG, Cardiff; JOANNA TRAFNA, London; YIZI ZHOU, Loughborough;

Total Membership
2313

NEW ACCREDITEES

The Society is pleased to announce that the Accreditation Panel has admitted the following members to the categories shown. These members are now entitled to use post-nominal letters as indicated: -

Admit to the category of Associate Fellow (AFORS)

Andrew CULLING

Admit to the category of Fellow (FORS)

Sayara BEG

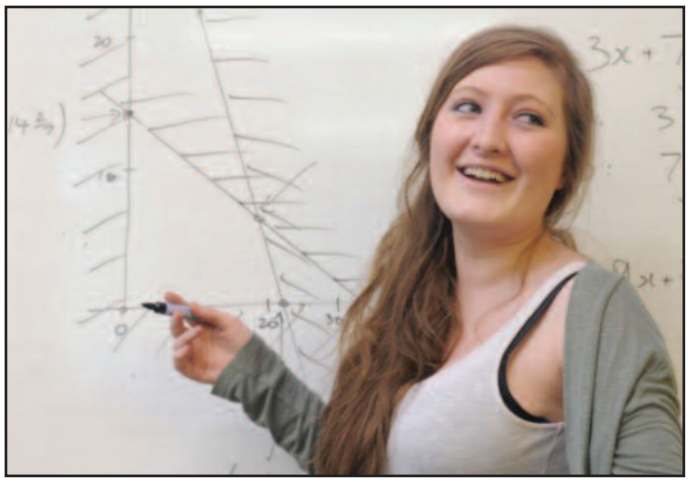
Kate HAMMOND

<OR>

DECISIONS, DECISIONS

LOUISE ORPIN, EDUCATION OFFICER

Following on from last month's article about Decision Maths and its future in the new A Level, I wanted to let you know what we think is likely to happen.



Our experience at the ALCAB meeting was not as positive as we might have hoped. It is a shame that Decision Maths has many critics and that they seem to shout louder than those in favour of the module. We feel that this is likely to lead to the loss of this applied content in the proposed new Maths A Level.

The requirement for a linear structure removes much of the flexibility that has contributed to the steady rise in numbers taking A Level Maths since 2004. We are also concerned that this will lead to the content being fixed, so even if it is just Mechanics and Statistics that remain, students will have no choice over what they study. The current format allows students to tailor their mathematical learning to suit their next steps, be it university or employment.

Our worry is that both the loss of Decision Maths and the move back to a linear structure will affect people's decisions to study Maths at A Level. Not only will this have an impact on the country as a whole, but will mean fewer people coming through the system with the skills to study and enter into O.R.

I would urge our members working at universities to be particularly aware of the changes as this may impact on the numbers studying O.R. courses.

There will be a consultation in the summer (likely to be early rather than late summer) to which the Society will respond and I would encourage universities to respond too. I will ensue that the consultation is disseminated as soon as it has been made available.

<OR>

'GREAT AND GOOD' INTERVIEWS FOR THE ARCHIVE

MARTIN KUNC

Documenting our roots: expanding the interviews with the 'Great and Good' in the field of Operational Research for the OR Society Archives. A Reminder

Ask not what O.R. has done for you but what you have done for O.R. Academics only survive by writing papers and those papers will, no doubt, remain in the archives in perpetuity. The same however cannot be said about practical applications of O.R. Practitioners are unlikely to become immortalised in the same way but, it is the practitioners who have to live in the real world and hence who are likely to make the mistakes from which the rest of us can learn. It has been said many times and in many ways that no one lives long enough to make all the mistakes.

Projects which finished on time, within budget and solved all of the customers' problems may be very good for the business but what is really interesting is why did it take so much longer than expected, why did it cost so much more than estimated, why did the client not ask the right questions in the first place and why did the project not achieve the expected benefits?

Think for a minute, what can we leave for the practitioners of O.R. in 2050? Papers? Books? Or who are the current practitioners?

In a previous O.R. Inside (June 2013), I invited to the members of the OR Society to provide names of the people that we should interview to complete the memory of the 'Great and Good' in O.R. Now I am asking **YOU** to fill in a few questions via the survey (https://wbs.qualtrics.com/SE/?SID=SV_3w9drEYAsLdiScl). Given the advance of technology, you may consider including any other documents for the archives: papers, CVs, videos, etc. Please, contact me (martin.kunc@wbs.ac.uk) if you have any problem filling the interview.

June 2014

<OR>

BEHIND EVERY SILVER LINING

NIGEL CUMMINGS

In a session focused on the need for cloud-based simulation (CBS) from the perspective of simulation practitioners, Bhakti Stephan Onggo (Lancaster University) spoke about the grand challenge of CBS. Modelling and simulation are well suited to the facilities afforded by cloud computing.

Bhakti Stephan Onggo

Simon J E Taylor

Web-based simulation (WBS) is now a reality and according to Bhakti Stephan Onggo the similarities between WBS and CBS cannot be ignored. WBS commercial applicability and adoption by users has not grown to the desired extent, but he believes this is all set to change and events like SW14 can only help make this happen.

The emphasis of Bhakti Stephan Onggo's presentation was on WBS as a technological tool instead of a socio-technological tool in which users, their needs and circumstances are considered. He spoke of a survey which was conducted to understand the needs and perceptions from practitioners on CBS. The results of the survey indicated that practitioners already have a good exposure to cloud applications and mobile gadgets. There also appeared to be evidence of a need for CBS for the provision of fast response time, for more effective communication tools and functionalities to share, store and retrieve models.

Continuing on this theme of simulation in the cloud Simon J E Taylor (Brunel University) spoke about developing a cloud computing-based platform for simulation in manufacturing and engineering. There is a demand from simulation users for speed and a need to obtain results from simulation runs quickly. Cloud computing offers the potential for scalable, on-demand access to resources that could be used to speed up simulation. To this end, CloudSME is a project that is dedicated to developing cloud computing solutions for simulation in industry through the CloudSME Simulation Platform with its two key elements: gUse and CloudBroker.

Russell Cheng (University of Southampton) concluded this presentation session by talking about the use of massively parallel processors in simulation. There have been rapid advances in the design and availability of general purpose graphics processing units (GPGPUs) suitable for general purpose programming. Areas where they have been heavily applied include particle physics and financial modelling. However, so far, their use in discrete-event simulation modelling had been limited.

Russell's presentation provided information about the usefulness of such hardware in O.R. simulation studies especially with regard to problems where large data samples are involved. He emphasised that handling 'big data' samples has become increasingly important and the use of GPGPUs is likely to become ever more worthwhile as a result of this usage and is now possible to harness the power of super-computing from the comfort of one's desktop.

<OR>

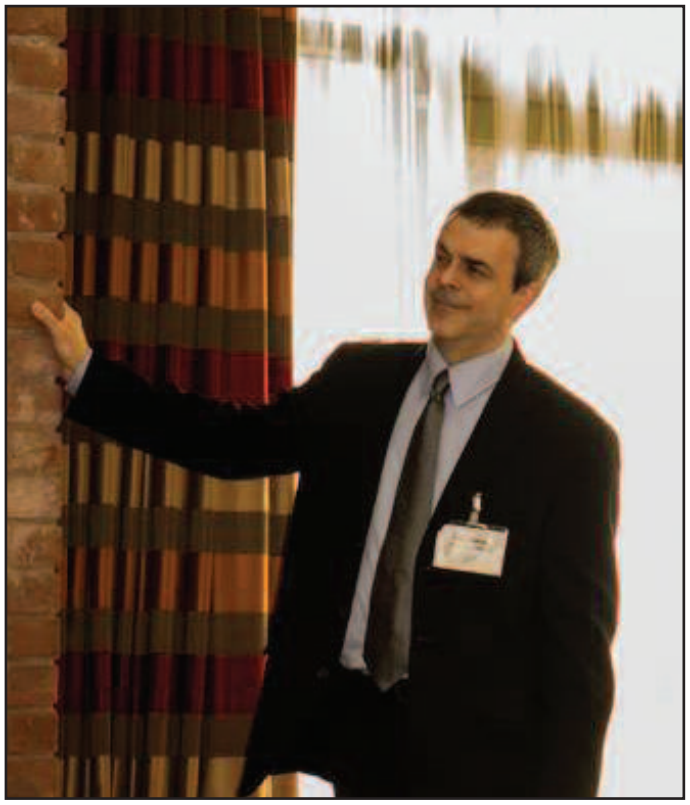
Russell Cheng

DES OR SYD AT SW14

NIGEL CUMMINGS

One of the themes at this year's Simulation Workshop (SW14) was a comparison between discrete event simulation (DES) and systems dynamics (SD). Roger McHaney, Kansas University started the ball rolling by giving a presentation entitled 'Model Building in System Dynamics and Discrete-Event Simulation: A Comparison of Analysts' Language'

Roger outlined the differences between the two approaches and illustrated how best to choose between the two based on data gained from experimental exercises involving expert modellers. Their motivations were similar, he said, but they evolved separately with little overlap between users of each technique. Both methods look at problems which are typically non-linear and involve complex interactions usually between processes making demands on limited resources through time. The use of either SD or DES invariably means that the analyst has been unable to solve the problem(s) analytically although it should also be recognized that both these methodologies provide a great deal more insight into these problems than could be gleaned from using a mathematical formula (a theme later discussed in the Panel Session).



Roger McHaney

Although the two approaches often deal with similar problems, a study on the modelling process by Tako and Robinson (2010) showed analysts using DES in a more linear progressive way with more focus on model coding, verification, and validation, while those using SD were more concerned with conceptual modelling. An SD approach to representing complexity involves the use of feedback loops, stocks, and flows which can help explain nonlinearity while a DES approach was characterised more by the passage of blocks of time during which no changes to the system state occur and how 'entities' arrive, undergo service and complete their roles with a resulting impact on a network of queues, and this was a compelling reason to use it for problems involving engineering, business analysis, and design as an aid to the decision-making process.

Anastasia Anagnostou made a presentation on some work she had done with Simon Taylor, concerning the development of a methodology for building large-scale distributed hybrid agent-based and discrete-event simulations.

Her presentation illustrated this by considering the case of emergency medical services (EMS). These are complex and multidimensional systems that provided immediate care to patients with acute illnesses or serious injuries both *in situ* and, if necessary, during transit to hospital.

The structure and functionality of EMS vary considerably worldwide but they were largely composed of public, private and voluntary organisations. Simulating the inputs, flows, outputs and results of EMS care was a complex issue, made all the more difficult by a paucity of EMS simulations that featured the complete patient throughput.

The majority of models to date only considered the ambulance service up to the point of patient handover. In this research, a more comprehensive perspective of EMS had been taken in order to provide insight for a global view of the emergency systems.

In order to model the whole EMS, the A&E departments of the hospitals were included in a realistic simulation model and these

Anastasia Anagnostou

Cathal Heavey

were operated in collaboration with the ambulance service in the simulation.

Anastasia concluded her presentation by stating that the proposed simulation methodology developed from the simulation work undertaken was based on experience in conducting hybrid ABMS-DES distributed simulation studies on emergency medical services, and could be used as a guide for large-scale simulation projects that involved multi-paradigm distributed simulations.

Cathal Heavey presented a paper concerning some work done with Panagiotis Barlas, University of Limerick, entitled 'Towards Automated Simulation Input Data'. The presentation illustrated how DES could be used as an effective tool for complex process analytics, despite drawbacks concerning the costs spent on collecting and processing the input data from different data sources.

Large companies, he said, continuously recorded raw data, and were able to collect large quantities of resource event information. However, usually it was difficult to extract and reuse data for future DES projects. The difficulty was based on the sharing between data files and simulation models. Thus there was a need for simulation technology that was more friendly and reachable to a larger range of industrial users and particularly Small and Medium Enterprises (SMEs).

To this end the Decision support in Real-time for Efficient Agile Manufacturing (DREAM) project had been initiated. Its purpose was to increase the competitiveness of the European manufacturing sector through targeting the advancement of DES technology beyond the current state of the art. DREAM was also designed to encourage the production of an open-source simulation based platform, which could provide the capability of developing tailored simulation based solutions for SMEs and other organisations.

The paper demonstrated how a newly developed tool could address the problem of the time consuming pre-coding for DES projects. The tool was however; still a work-in-progress and further enhancement of its capabilities would be developed incrementally. The current implementation of the tool however, did provide its users with the ability to import data in different file formats like txt, excel, csv and xml, initial data preparation with the replacement of missing values, calculation of some basic statistical measures, distribution fitting and output preparation again in different file formats but mainly to the use of CMSD, a standard for the exchange simulation based data. As a preliminary work for the DREAM project, it showed great promise and proved the functionality of a useful new Knowledge Extraction tool.

SW14 POSTER SESSION

NIGEL CUMMINGS

What conference would be complete without its poster session! To encourage entrants a prize 'for the poster presentation judged most compelling' was to be presented by the President.

The session was organised by Thomas Monks, Exeter University who also presented a poster although he was naturally considered ineligible for the prize despite all his hard work - sorry Tom!

To start the session off **Samantha Shaw**, Dstl, spoke about the use of a commercially available simulation modelling toolset, the Comprehensive Airport Simulation Tool (CAST), originally developed to help optimise airport design, and how DSTL had used it innovatively within the Homeland Security arena.

Amy Connor from AWE presented a poster which depicted the use of a generic facility throughput simulation model currently under development. It is intended to be used to allow facility managers and work planners (of production facilities) to build and use a simulation model in order to test ideas on how to accommodate future demand or product changes.

Amy Connor

Hanjing Zhang from Loughborough University described a Police Patrol Officer Work Patterns simulation to assist the police in optimising staff allocation, especially for police patrol officers, with the objective of maintaining (or improving) the service provided to meet the demand from the public within a reduced budget. (The Police have faced a 20% cut in their budget since 2010 in England and Wales.)

Tom Boness (ORH Ltd) displayed a poster depicting work done on Clinical Capacity Planning with AmbSim. His two minute was spent explaining how a discrete event simulation model in AmbSim could be used to model the response of emergency vehicles to medical incidents and the subsequent transport of patients to hospital. He said the model was in active use in a range of real world clinical capacity planning projects both in house at ORH and externally.

Tom Boness

Thomas Monks' presentation depicted some work done with Katy Hoad, and Frances O'Brien, both from the University of Warwick concerning an international survey of over 300 modellers to investigate the extent to which optimisation, meta-modelling and design of experiments could be used in practice. Outside of academia use of methods is hampered by a lack of application knowledge and a persisting view that such techniques are not necessary, this study helped to clarify the extent to which such techniques provided benefit.

Thomas Monks

Niniet Indah Arvitrida described an agent based modelling approach to answering questions about the effects of competition on supply chain collaboration. The practice of ideal supply chain collaboration is difficult to apply, but several findings suggest that competition can improve supply chain performance. This research proposed an agent based model which could be used to prove or disprove such assumptions.

Niniet Indah Arvitrida

The winning presentation was given by **Johanna Leigh**, Loughborough University, who spoke about Police Demand Modelling and Predictive Positioning for Effect. With the funding cuts currently being implemented on the police force, improvements in its running efficiency are vital. Predictive positioning can therefore be seen as a very cost effective asset to any police force struggling to meet its budget constraints. This piece of work improved efficiencies through locating resources based on crime trends and area coverage, and provided officers with more time to patrol, and increase their visibility to the public.

Congratulations Johanna

Professor Stewart Robinson and
Poster Presentation winner, Johanna Leigh

EVENTS WORLDWIDE

To see the full listing go to:

www.theorsociety.com/Pages/NonSociety/NSEvents.aspx

SUBMIT YOUR PRESIDENT'S MEDAL ENTRY AND RAISE YOUR PROFILE!

The President's Medal is one of The OR Society's most prestigious awards and we're inviting entries for the 2014 competition.

The President's Medal is awarded for the best **practical application of O.R.** submitted to the competition (a wide definition of O.R. is used). Entries are welcomed from both industry based O.R. workers and consultants as well as from academics. One of the main qualifications for entry is that the work has been implemented before submission. If you're thinking of giving a **case study based paper at OR56**, why not consider aiming a bit higher and going for the President's Medal?

Criteria for judging include: The level of demonstrable benefit, the intellectual and novel content of the solution, the likely longevity of the solution, the excellence of the O.R. process.

Entry couldn't be simpler! You need only to provide a short summary of the work, concentrating on the criteria listed above and listing the team members. It is important that you submit with your entry an endorsement by the client of your work. Entries will be short listed and those selected will be invited to present their work at the OR56 conference in September 2014 which will be held at Royal Holloway, University of London.

In addition to receiving the medal, winners will be entitled to use a special **'medal winners' graphic** (above) on their stationery and promotional materials. All the short listed entries will receive the support of The Society's 'house' journalist to develop and publish an article based on the project.

RECENT PRESIDENT'S MEDAL WINNERS

2007 – T Lewins, M Sykes PA Consulting; A Moon Nissan UK: Developing a production-schedule tool
2008 – I Wright, DWP: Optimising the Department of Works and Pensions' estate
2010 – Panos Frangos, Simon Hughes, Sellafield Limited: A model future for the UK's nuclear legacy
2011 – Stephen Hammond, Keith Slater, NATS: Air Traffic Control, Business Regular and CO_2 Emissions
2012 – Colin Marston, Patrick Rose, Dstl: Shaping the NATO Plan for Afghanistan
2013 – Simon Mardle, Louise Fildes, Tony Lewins, EY: Optimising the Retail Network for New Zealand Post

Entries by e-mail to the Secretary and General Manager, The OR Society, gavin.blackett@theorsociety.com by 30 June 2014

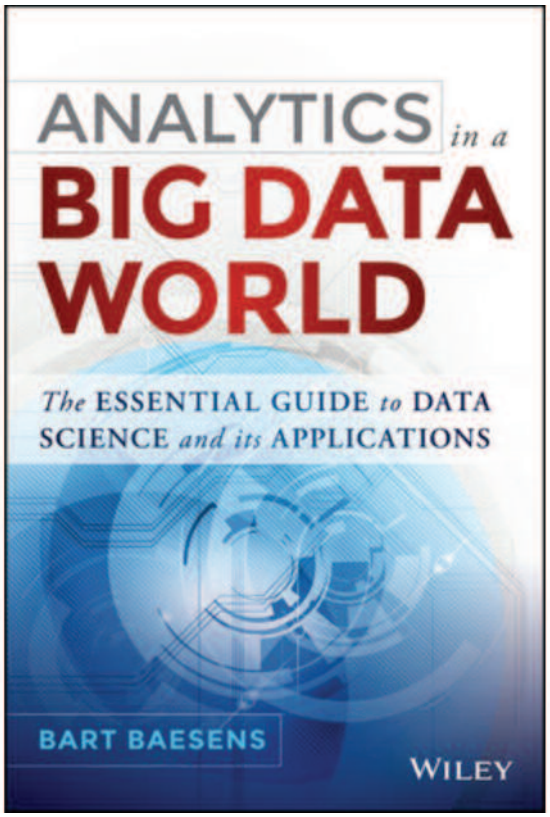
Informal enquiries can be made to Geoff Hook, Lanner Group 01527 551315, email: ghook@lanner.co.uk

REMEMBER…sell your entry and obtain your client's permission!

ANALYTICS FOR ALL

NIGEL CUMMINGS

Analytics in a Big Data World



Professor Baesen says, 'During the past few years, I have been teaching many courses around the globe on the topic of Big Data & Analytics. Having talked to many business professionals and done lots of projects, I wanted to write a book which is relevant to decisions that all businesses will need to make in the coming years. As the number of practical applications for data skyrockets, learning how to extract business value from big data becomes a competitive requirement. Big data sets are assets that can be leveraged quickly and inexpensively, if tackled wisely! My book *Analytics in a Big Data World* (Wiley, ISBN: 978-1-118-89270-1) addresses this seemingly Herculean task of coming to grips with multiple channels of data and sculpting them into quantifiable value. This book is for business professionals who want a focused, practical approach to big and data analytics. I hereby focus on case studies, real-world application, and steps for implementation, using theory and mathematical formulas only when strictly necessary!' (As soon as we can get hold of a copy we will run a full review, ed)

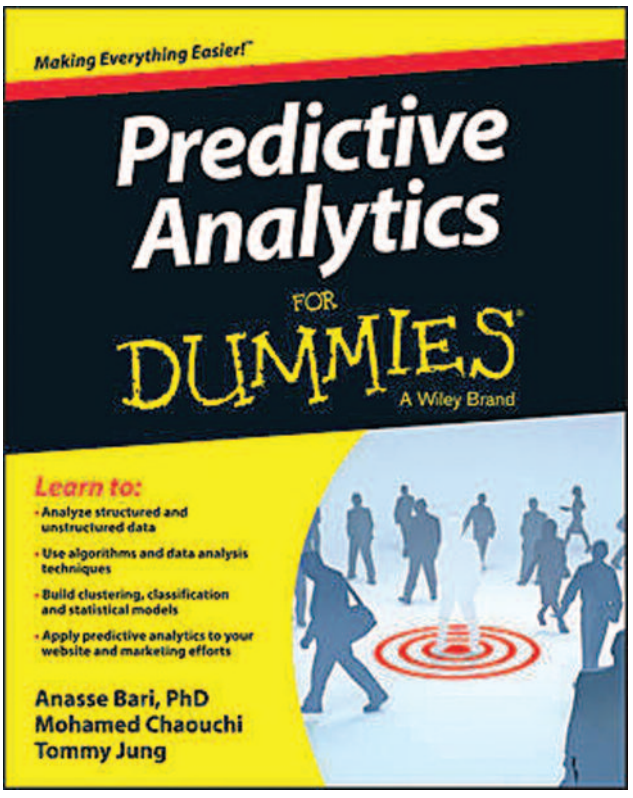
In addition to writing this book and lecturing at Leuven and Southampton, Bart also runs two OR Society courses, both available in June, Data Mining: Techniques and Applications (10th) and Data Mining: Advanced Data Mining (11th). If you are very quick, you may just be in time to get one of the few remaining places.

'Predictive Analytics for Dummies' was written by Anasse Bari, Mohamed Chaochi and Tommy Jung and is one of the highly popular 'for Dummies' series published by Wiley & Sons (ISBN: 978-1-118-72896-3). As you would expect, it is written in an easy to understand way but also explains many of the tools and techniques used to try to make sense of 'big data' albeit in a rather simplistic way.

The book covers a range of topics across many business fields, from advertisement sales to fraud detection. Bari and co. believe there is a, 'huge appetite for this knowledge by engineering professionals and students, and todays' job market absolutely demands knowledge in data analytics and statistics.' Other topics include using structured and unstructured data, building models, creating a predictive analysis roadmap, setting realistic goals, and budgeting. The books' 384 pages also show readers how to use big data and data mining to discover patterns and make predictions.

(It is unfortunate that it suffers from rather poor editing and proof-reading (or were the errors included deliberately to prevent plagiarism). The fact that you are reading this review in *Inside O.R.* suggests that this is probably not a book for you. Ed)

<OR>



ROWING FOR GOLD

NIGEL CUMMINGS

SAS has signed up to a three year sponsorship with the UK sport's governing body to assist with keeping UK rowers ahead of the field.

The goal of this collaboration is to apply analytics techniques to the problems associated with improving training, predicting potential problems and generally increasing potential.

Predictive analytics will play a huge part in British Rowing's Start programme, which takes school children who might not have considered rowing and brings them to Olympic athlete level. SAS's task will be to analyse raw talent's physical data and reveal potential stars and then to track their training to ensure they reach maximum performance levels. *(Five out of the ten gold winners at London 2012 emerged through the Start programme.)*

Sir David Tanner, performance director of the GB rowing team said: 'Performance is absolutely key to everything we do with the GB rowing team because on the international stage, small improvements are the difference between winning and losing. By partnering with SAS we now have the capacity for much more in-depth and speedy analysis of the rowers, allowing us and them to optimise every session. We are a leading rowing nation in the world, and topped the medal table in 2012, but we know that others are not standing still.'

Although successful, British Rowing has not used sophisticated data analysis prior to this partnership with SAS. A large membership database which could only pull out basic information and disparate spread sheets composed by bio-medical researchers meant that data could not be effectively utilised for maximum performance results.

Injury prediction is an important aspect of the SAS Visual Analytics tool the team are using. Olympic medallist Greg Searle believes that SAS could have revealed a weakness in his left side core strength and his coaches may have been able to modify his training regime – eliminating the risk of injury.

SAS has placed their graduate analysts on the project, to allow better integration with the rowing team so they learn more about specific rowers' training needs. SAS is in the middle of its data scientist's competition, a university initiative to increase home-grown talent in the data science field. If their application of predictive analytics to rowing can be shown to provide tangible benefits, it could become the norm for all UK sports teams.

<OR>

JOIN OUR
ANALYTICS NETWORK
Visit: www.analytics-network.com

BUT IS IT 'SCIENCE'?

NIGEL CUMMINGS

The Society's **Developments in Advanced Analytics and Big Data 2014** event took place on the 30th April 2014, at BMA House, London to a packed house.

Sayara Beg

Sayara Beg, Chair of the Society's Analytics Network, started the proceedings by talking about, 'Data Science: O.R. Best Practice and Governance in Analytics Consulting'.

In 2010 the Harvard business review declared that being a data scientist was the 'sexiest job of the century'. Four years later, they said the data scientist job is tedious with the majority of the time being spent doing data discovery, data wrangling, data cleansing, data profiling and a lot less time spent modelling and visualising results.

There is an expectation that has largely been set by the media, that data scientists are scientific experts of some sort who possess knowledge of statistics, mathematical problem management, Operational Research, modelling and even physics. The crux of the message being promoted by the media was about the need to identify algorithms to use, gather insights, discover patterns and utilise the tools of the trade, the associated hardware, and to possess the ability to do some programming.

To be a data scientist, you also needed to know how to access data and understand that the majority of that data is stored in hardware as Hadoop and Mongo DB. In addition to being aware of these constructs, the data scientist has to be able to utilise software to capture, extract, prepare and cleanse the data. The data scientist also has to possess interpersonal communication skills, the ability to communicate and present results with an emphasis on visual communication typically using, colour, shape, size and quantity.

Most of us who do any form of reporting using large data, especially in the field of business intelligence and data warehousing, would be expected to be familiar with SQL structured coding as a means of extracting data.

Explorative data analysis was the next step in this understanding; a means of using a number of algorithms to get a 'feel' for data, and for those algorithms that would generate visual results. This was a new means of presenting, modelling and visualising data, though it still relied upon extraction, capture, and profiling in order to identify what was in the data.

The use of the web as a medium for transactions and data capture had resulted in an explosion of accessible data for analysis. Whereas in the beginning it had all been very tabular very ordered and very easy to read in columns, now the sheer volume and type of data meant that a new way had to be adopted to look at it and understand it, and this new way was visual - the use of diagrams, pictures, shading, colour and shapes.

But even this approach presented problems. 'How am I going to read the data from these kinds of visualisations to produce a summary for somebody else, how do I validate what is correct? Has it been authenticated? Has it been peer reviewed? In short, does it comply with the 'scientific method'?

The OR Society had recently been provided licensing by the Science Council to offer chartered scientist registration. What are your thoughts about this – is it a good thing, would you be interested in becoming chartered?

A video of Sayara's presentation and slides can be accessed from our website.

OPERATIONAL RESEARCH SOCIETY

EXTENDING THE IMPACTS OF O.R. IN PUBLIC POLICY

AN AGENDA FOR A NEW SPECIAL INTEREST GROUP OF THE SOCIETY

at LSE's Rosebery Hall Conference Centre,
90 Rosebery Avenue, LONDON EC1R 4TY

Thursday, 26 JUNE 2014, 14.00 to 17.00

Chair: **Professor Stewart Robinson**, President of the OR Society

Registration and refreshments from 13.30

This open half-day event offers an opportunity to review the prospects for extending the already significant contributions of the operational research community to the development of public policies, with particular emphasis on approaches to policy design and stakeholder engagement.

In Europe and other continents, processes of policy development at national, local and other levels have already been widely influenced by the contributions of UK O.R. workers; not least by the innovations in theory and practice pioneered by staff of the former *Institute for Operational Research [IOR], which was* launched fifty years ago as a joint venture of the then councils of the OR Society and London's Tavistock Institute of Human Relations.

- **The programme will open** with a review of the widening influence of O.R. on public policy by veterans of the IOR initiative, including John Friend, who played a leading role throughout and has recently been responsible for an OR Society charitable project on the *Future Policy Influence of O.R.* This will be followed by a report on a joint event on June 5 addressed in particular to policy professionals in Whitehall.
- **This introduction will be followed** by a period of interactive problem structuring in facilitated groups. In this, participants will be invited to engage in exploration of alternatives for future investment in the three key areas of **skills** for shaping public policies; **research** in public policy processes; and **technologies to** for public policy support the development of public policies.
- **The programme will conclude** with contributions from O.R. scientists and others in the government service, academia and consulting who are now taking a lead in the launch of a new OR Society **Special interest Group on Public Policy**, dedicated to the extension of O.R.'s influence in public policy processes in the UK and worldwide.

This event follows a special invitational event at the Royal Society on 5 June on the related theme of shaping choices in public policy, sponsored jointly by the OR Society; the Cabinet Office's Policy Profession Support Group; and the Cambridge University Centre for Science and Policy. The present open event will provide an opportunity for threads from this speearlier that preceding event to be picked up and pursued further, to help in building a wider momentum in the future public policy influence of O.R.

<OR>

REGIONAL SOCIETIES

SCOTLAND (ORGS)

CONTACT: Kerem Akartunali (Chair)
EMAIL: Kerem.Akartunali@Strath.ac.uk
CONTACT: Roberto Rossi (Secretary)
EMAIL: roberto.rossi@ed.ac.uk

ORGS Event
The Design and Implementation of Metaheuristics

Date/Time: Monday, 02 June 2014 Time TBC
Venue: University of Edinburgh: LT7 and LT4 – Business School, 29 Buccleuch Place, EH8 9JS
Speakers: Michel Gendreau

Description

Very many optimisation problems could be modelled as mathematical programs and solved using optimal methods, heuristics including metaheuristics, or hybrid methodologies that combine optimal and heuristic methods. For most real-life applications; such as, design of distribution networks and location of facilities, planning and scheduling of supply chain operations, and transportation of merchandise and routing of vehicles, all involve optimization problems which are typically combinatorial in nature and the only realistic way of solving such combinatorial optimisation problems is using heuristics.

This workshop is designed for researchers (e.g., PhD students, Post-docs, faculty) and aims at presenting the landscape of research on the design and implementation of metaheuristics. A bouquet of renowned academics in this field shall present panoply of different designs and implementations of metaheuristics for both deterministic and stochastic routing problems with application in the transport of merchandise. Discussion sessions are intended to facilitate dialogue between the participants.

Register at www.business-school.ed.ac.uk/about/events/

YORKSHIRE & HUMBERSIDE (YHORG)

CONTACT: James Crosbie
TEL: 07891244594
EMAIL: jamescrosbie@hotmail.co.uk

YHORG meeting

Date/Time: Wednesday 9th July 2014, 5pm
Venue: Sheffield Hallam University, room 2502, Harmer Building, city campus

This event showcases two very different areas where O.R. is being and can be used in Yorkshire and Lancashire.

Using Simulation Approach to move from Manual to Real-Time Autonomous Scheduling for a Batch Heat Treatment Process

Steve Thornton, Tata Steel

For several years, simulation has been used to explore redesign of and to stimulate knowledge capture in various Tata Steel operations. This talk will present general experiences and lessons and focus on the case of a batch heat treatment plant, describing a simulation project approach coupled with data mining to optimise operations, culminating in an automated autonomous real-time scheduling application being developed in conjunction with a multi-partner Technology Strategy Board project (AUTOPLAN).

Steve is a Scientific Fellow in Tata Steel R&D based in Teesside in the UK. In this technology leadership role his 'Specialist Subject' focuses on integration of data and knowledge through the manufacturing chain to assure consistent product quality standards. Together with his team he has applied data mining and discrete event simulation approaches widely in the steel industry, to directly and indirectly influence design and control of manufacturing operations. Integrating data analytics to influence real-time operations on a through process basis is a current hot research topic.

The potential for O.R. in housing associations: working intelligently to increase value

Muriel McGrath, Mosscare

Mosscare Housing Group is a charitable, not-for-profit housing association with around 4,500 homes spread throughout the Greater Manchester area as well as eight estates more recently taken over from Manchester City Council's Stockport housing stock. Along with most social landlords, Mosscare increasingly faces a slew of challenges, including funding cuts, changing regulatory and advisory expectations, and increasing social demands with limited resources. This talk will look at some of Mosscare's activities and challenges from an O.R. perspective, and it will include a brainstorming session where attendees will be encouraged to suggest and develop ideas where O.R. techniques and systems thinking can make a difference to the organisation, in terms of both value for money and improved social outcomes.

Muriel is a relatively new O.R. practitioner, having completed her degree in Business Mathematics just last year. Her role at Mosscare Housing is a temporary post, her first in the field of continuous improvement, though before returning to university as a mature student her career included managerial roles within regulatory bodies (including the GMC and GTCE) and consultancy work with local government.

Refreshments will be available from 4:30pm. There will be a short AGM after the talks and all are welcome to join the speakers for drinks and dinner after the event. Details of the location can be found at:
http://www.shu.ac.uk/university/visit/find-us/city.html

Please contact James Crosbie on jamescrosbie@hotmail.co.uk to book a place.

SPECIAL INTEREST GROUPS

CRIMINAL JUSTICE

CONTACT: Ian Newsome
TEL. DDI: 01924 292244 **Extension:** 22244
EMAIL: ian.newsome@westyorkshire.pnn.police.uk

Criminal Justice Summer meeting 2014
Date/Time: Monday, 23 June 2014 at 13:30 - 16:30
Venue: London Mathematical Society, Russell Square, London
Speaker: various

'Our summer meeting will include talks by Prof Keith Still (G4S Professor of Crowd Sciences, Bucks New University) on how O.R. is applied to crowd safety; Martin Rahman/Gail Mawdsley (West Yorks Police) on assessing the likely impact to changes in police processes; Jordi Blanes-I-Vidal/Tom Kirchmaier (LSE/Manchester Business School) on a project exploring large data sets from a UK police force; and Nasir Hussain (Strategy Foresight) on a study carried out for the Swedish National Police Force into social exclusion.

Please contact suemerchant@hotmail.com asap if you would like to attend as space is limited, and final details will be sent to you.

HEALTH & SOCIAL SERVICES

CONTACT: Thierry J. Chaussalet
TEL: 020 7911 5000 ext 4310
FAX: 020 8911 5187
EMAIL: chausst@wmin.ac.uk

Sharing Experiences of Health and 3rd Sector O.R.
A joint Health/Third Sector Special Interest Group OR Society meeting

Date/Time: Monday, 2 June 2014 from 13:30 to 18:00
Venue: The Pavilion, University of Westminster, 115 New Cavendish St, London, London, W1W 6UW.

Charities and social enterprises are involved in a wide range of health service provision, and their role, in the UK at least, is arguably growing to fill gaps left by statutory cutbacks. Operational Research (O.R.) has been successfully used in many ways to design and improve health service provision. But O.R. has historically been less visible in the third sector than in the state and private sectors. This event brings together speakers with experience of health, the third sector and O.R. to shed light on what is happening in these areas and how the different groups can build on this for the future.

Confirmed keynote speakers include:

Nigel Edwards, Chief Executive, Nuffield Trust: Current issues in Healthcare policy and management - Opportunities for O.R. and the 3rd sector.

Jeremie Gallien, Associate Professor of Management Science and Operations, London Business School: Using O.R. to improve health delivery systems in sub-Saharan Africa.

Sam Mackay, Founder Apteligen Limited

Measuring the impact of a community-based intervention to improve health and well-being. This presentation will demonstrate recent work that has been undertaken with a national care and support provider from the third sector:

- To develop a measurement and evaluation framework for assessing the impact of an innovative, community and asset-based intervention for vulnerable people that aims to improve independence and quality of life, and
- To design and build a modelling tool to demonstrate early impact of the pilot project, based on a sample of typical cases

Other speakers include:

Linda Henry, Unique Improvements Ltd: View from the bridge: third sector consultancy for public sector change.

Admission is free and spaces are reserved on a first booked basis. Bookings can be made on Eventbrite using this link: http://goo.gl/gkILrR

For additional information, please contact John Holt: jholt@danielholt1992.com or Thierry Chaussalet: chausst@westminster.ac.uk

O.R. AND STRATEGY

CONTACT: Frances O'Brien
TEL: 02476 522095
EMAIL: Frances.O'Brien@wbs.ac.uk

Strategy Special Interest Group
Developments in Scenario Planning
Date/Time: 4 June 2014, 10.00 – 16.30
Venue: Warwick Business School, Coventry, West Midlands, CV4 7AL In lecture theatre B0.01 at WBS Scarman Road (ground floor). (Lunch will be served in the Staff Lounge (first floor) and teas and coffees will be served in an area close to the lecture theatre).

Speakers: Gerald Wessing, Shell; Tom Wales, Oxford Analytica;Gill Ringland, SMAI Consulting; Ron Bradfield and George Wright, Strathclyde University; Gilberto Montibeller, LSE;Ted Fuller, University of Lincoln; Rafael Ramirez, Said Business School & Green Templeton College

Scenario Planning, a tool to explore alternative futures, has been used by organisations for many years. Over the same period, it has

attracted the attention of numerous scholars across a range of disciplines including management and O.R.

This one day event has been jointly organized by the Strategy Special Interest Groups of the OR Society and the British Academy of Management. Its purpose is to bring together a collection of speakers to share their varied experiences and reflect on developments in the scenario planning field. We are delighted to have eight speakers from across the practitioner-academic spectrum, including those who develop and use scenarios, those who facilitate scenario development in participative settings and those who research into the field.

To Book: There is a small charge of £20.00 + VAT to cover refreshments, lunch and printing. Please use the following link https://www.theorsociety.com/DIF.aspx?Page=STRATANDBAM2014 or go via the OR Society's website at www.theorsociety.com, then Services, Events & Products then Special Interest Groups.

For BAM members only – to avoid paying VAT, Members of BAM are advised to book via the BAM website at http://www.bam.ac.uk/civicrm/event/info?id=2778&reset=1

Parking: We suggest that participants park in either car park 7 or 15, which are 'pay on foot' car parks. A barrier restricts access to these car parks. Users must take either a ticket or blue chip coin from the machine on entry, which will cause the barrier to raise. To exit the car park, payment must be made at the pay station located close to the exit. Once the payment has been made, the ticket or blue chip coin will allow exit when it is placed into the barrier machine at the exit. Participants should expect to pay £3.00 to park for the full day.

Participants may also use pay and display car parks: 8, 8a, 8, 10, 10a, 10b, 12 and 13. Entry to these car parks is unrestricted. A ticket must be purchased for the required time period (we would recommend participants pay the full £3.00 for full day parking) and the ticket displayed in the vehicle. Participants should not use any other car park. We cannot reserve spaces for participants and cannot guarantee that spaces will be available.

For further details on the event, please contact frances.o-brien@wbs.ac.uk (The OR Society) or maureen.meadows@open.ac.uk (B.A.M)

THIRD SECTOR O.R.

CONTACT: John Holt
EMAIL: jholt@danielholt1992.com

Sharing Experiences of Health and 3rd Sector O.R. A joint Health/Third Sector Special Interest Group OR Society meeting

Date/Time: Monday, 2 June 2014 from 13:30 to 18:00
Venue: The Pavilion, University of Westminster, 115 New Cavendish St, London, London, W1W 6UW.

Charities and social enterprises are involved in a wide range of health service provision, and their role, in the UK at least, is arguably growing to fill gaps left by statutory cutbacks. Operational Research (O.R.) has been successfully used in many ways to design and improve health service provision. But O.R. has historically been less visible in the third sector than in the state and private sectors. This event brings together speakers with experience of health, the third sector and O.R. to shed light on what is happening in these areas and how the different groups can build on this for the future.

Confirmed keynote speakers include:

Nigel Edwards, Chief Executive, Nuffield Trust: Current issues in Healthcare policy and management - Opportunities for O.R. and the 3rd sector.

Jeremie Gallien, Associate Professor of Management Science and Operations, London Business School: Using O.R. to improve health delivery systems in sub-Saharan Africa.

Sam Mackay, Founder Apteligen Limited

Measuring the impact of a community-based intervention to improve health and well-being. This presentation will demonstrate recent work that has been undertaken with a national care and support provider from the third sector:

- To develop a measurement and evaluation framework for assessing the impact of an innovative, community and asset-based intervention for vulnerable people that aims to improve independence and quality of life, and
- To design and build a modelling tool to demonstrate early impact of the pilot project, based on a sample of typical cases

Other speakers include:

Linda Henry, Unique Improvements Ltd: View from the bridge: third sector consultancy for public sector change.

Admission is free and spaces are reserved on a first booked basis. Bookings can be made on Eventbrite using this link: http://goo.gl/gkILrR

For additional information, please contact John Holt: jholt@danielholt1992.com or Thierry Chaussalet: chausst@westminster.ac.uk

OR-30

June, 1984

John Crocker

R.S. 'Roy' Stainton was President of the OR Society during 1984 and 1985. His inaugural speech was given in February 1984 and a transcription appeared in the Journal in June. The talk was entitled 'Wither O.R.S.?' and was on themes that have probably troubled the minds of certainly the majority, if not all Presidents both before and since: how do we attract more members, retain those we have, provide better value for money or, in short, make the OR Society sustainable.

Although a great deal of what Ray had to say is still relevant today, I will not attempt to précis the full 5000+ words into this article. The fact that we are still discussing the same subject with the same urgency today suggest that whatever Ray did or did not do as President was firstly sufficient to postpone the complete demise of the Society (at least for 30 years) and was, alas, insufficient to ensure continual growth over that period (our numbers today are around 10-15% down on those in 1984). It is also, perhaps worth noting that we still go under the same name even though he felt it was inappropriate. (It is not [always] easy to get Board approval and almost impossible to get a consensus across all members.)

Jackson and Keys (University of Hull) also picked up on the general notion that O.R. was in crisis at this time. In their paper, they '[investigated] the relationship between O.R. and some other problem-solving methodologies' with a view 'to [providing] some valuable insights into the nature, strengths and weaknesses of the methodologies considered'. Firstly they list four reasons why some systems are more difficult to understand than others: not all attributes of the parts of the systems will be directly observable; laws relating to different parts of the system will invariably be probabilistic in nature; they evolve over time and; they inevitably involve more 'behavioural' problems. They then start talking about 'mechanical – unitary', 'mechanical – pluralist', 'systemic – unitary' and 'systemic – pluralist' problems along with 'messes' and 'wicked' problems all of which sounded very interesting but alas it was at this point my eyes started to glaze over although I did pick up one interesting statement, 'The original problem situation is successfully tackled, although a different problem situation simultaneously emerges.' I seem to recall it was around this period that people talked about problems being on different planes – I knew I should have studied Philosophy rather than Mathematics at university!

The conclusion reached, after twelve pages is that there exists more than one type of problem and for each there exists more than one type of methodology appropriate to solving them – or at least, that is what I think they are saying and, what is more, they only had to read 58 papers to reach this conclusion.

Stainton, R.S. (1984) Wither O.R.S.?, *JORS* **35**.6, pp 463-472 (jors1984100a.pdf)

Jackson, M.C. and P. Keys (1984) Towards a System of Systems Methodologies, *JORS* **35**.6, pp 473-486 (jors1984101a.pdf)

<OR>

OR-20

External consultants expanding

Survey of O.R. Groups

We have now completed stage 1 of the OR Society's survey into the success and survival of O.R. Groups.

The aims were:

- To contact all known heads of O.R. Groups by telephone and collect some basic information from them and to produce an overview report.
- To interview some heads of successful O.R. Groups
- To identify information to be collected via structured interviews and questionnaire surveys in stage II and III (including if possible, clients of O.R. as well as O.R. Managers)

Useful

The telephone survey has proved to be most helpful. It has confirmed that the Society's Heads of O.R. list is somewhat out of date, and whilst a number of groups have disbanded recently, we have uncovered a number of groups, though not new, of which the Society was unaware.

A more accurate list of O.R. groups is now being compiled.

An overview report has been produced and discussed with the project steering group. It will now be revised and circulated to Council members in time for the June Council meeting. The overall picture can be summarised as follows; though any figures are tentative until the more detailed surveys are carried out.

1. Groups were classified according to the following sectors:
   - Internals groups
   - Government groups (including local government and the

Audit Commission)

- External consultancy groups
- Organisations without an O.R. activity

2. The following trends were observed:

A number of O.R. groups have disbanded in the nineties (around 10) though most of the staff concerned have been redeployed. Balancing this a similar number of groups have been identified which were not on the OR Society list of groups. There is evidence of some central groups being split into two or more smaller groups are being reallocated into business functions. However many groups remain successful, and of those volunteering a view on their future almost two thirds reckoned their prospects were at least reasonable or better.

3. Government O.R. groups are mostly in good shape, and several have already successfully survived market testing. External consultants mostly report expanding business and recruiting.

4. A number of organisations on the OR Society list no longer have groups, but there is also evidence that a number of groups that were active in the 70's and perhaps early 80's, were disbanded in the late 80's.

5. It is perhaps not surprising that most Heads of O.R. reported that their group's performance had been scrutinised as part of value for money audits and that there were strong pressures on staff numbers in all central service units. The surviving groups had emerged stronger for the moment, but these pressures will continue.

Our survey will continue to investigate reasons for success and survival of O.R. groups, hopefully with some insight from clients of O.R. The Society might ponder the vast numbers of large organisations without an O.R. group, and how O.R. like activities might be identified and supported.

John Ranyard

<OR>

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IMPORTANT: Contributors please note. All contributions must be in four parts as follows (1) headline (approx 6 words); (2) mini-abstract (max 25 words); (3) main body of contribution (max 500 words); (4) keywords. At the editor's discretion, contributions exceeding 500 words will be shortened, serialised or published with the warning Long article. X words. Whenever possible contributions should be submitted electronically as Word files and emailed to insideor@theorsociety.com. Illustrations should be attached as JPG, GIF, TIF or files of other common formats. Contributions submitted in hard copy must be posted to The OR Society at the address above, or sent to the Society's fax number, and be clearly marked Inside O.R. All contributions must bear the author's name and address (not necessarily for publication). All contributions accepted by the editor will be published in the print version subject to availability of space. The editor's decision on all contributions is final and no correspondence will be entered into.

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DATA SCIENTIST
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This small, boutique consultancy works with major corporations, generating business and strategic solutions to improve profit performance by leveraging complex data situations. Consistent growth is driving their need for additional professionals offering proven modelling experience. Proven experience from within a relevant blue chip commercial analytical/modelling environment, expert knowledge of SQL and Excel and a minimum 2:1 degree in a quantitative subject from a well regarded university are also essential pre-requisites. **London**

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This premier OR/business modelling consultancy seeks additional consultants offering genuine self-confidence and drive, underpinned by a minimum 2i Hons academic track record plus, ideally, a relevant MSc. With engagements embracing a wide range of OR and related modelling activities such as optimisation, mathematical programming, forecasting, simulation and statistical analysis, those appointed can expect significant variety, commitment to training and career development potential, geared entirely to individual achievement. **Central London based**

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SENIOR QUANTITATIVE ANALYST
To £45,000 DOE + Benefits

Excellent opportunity to join a leading Energy Company in their high profile Domestic Portfolio Optimisation Department, providing analytical solutions. The role is highly analytical, requiring a strong numerate degree and at least 2 years proven analysis and modelling experience. Strong VBA programming skills essential. You will demonstrate an ability to apply theoretical knowledge to real world situations, be results orientated and possess excellent communications skills including stakeholder presentations and feedback to senior management. **West Midlands**

COMMERCIAL ANALYTICS CONSULTANT
£28,000 - £35,000 Neg DOE

Our client places Analytics at the heart of their business and the team are responsible for improving their commercial decision making using advanced analytical techniques. Initiatives are focussed mainly in the areas of yield management, pricing, aviation planning and optimisation of distribution. You will have an excellent academic background and either be a recent graduate seeking your first analytical, problem solving role or have c1/2 year's relevant experience and be keen to further expand your analytical problem solving capabilities. **Bedfordshire**

ANALYST – SUPPLY CHAIN/RETAIL
£25,000 - £35,000 + Shares + Bens

The ideal applicant for this role is likely to be a very strong numerate graduate, with or without commercial exposure, who has demonstrable quantitative analytical problem solving ability, technically adept in Excel, VBA and SQL. Logistics, Retail and/or GIS exposure would be a distinct advantage. Our client is a leading name in online retail shopping and this is an exceptional opportunity to join their well respected pioneering analytics team. **Hertfordshire**

INSIGHT & ANALYTICS ANALYST
c£40,000

Exciting opportunity to join this dynamic Insight and Analytics team within one of the most respected brands in the UK. Our client is looking for a specialist in operational insight and analytics with a minimum of 3+ years experience. The successful candidate should have an in depth understanding of statistics and predictive modelling with specific areas of expertise around logistic regression and multiple linear regression, experience of using SAS or SPSS and advanced Excel skills. **Bristol**

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For an informal discussion in total confidence on any of these positions or the market in general, please contact: Mark Chapman, Teresa Cheeseman, Kate Fuller or Sophie Nickolls. Alternatively visit our website to view our current vacancies.

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