INSIDE O.R.

OCTOBER 2014 NO 526
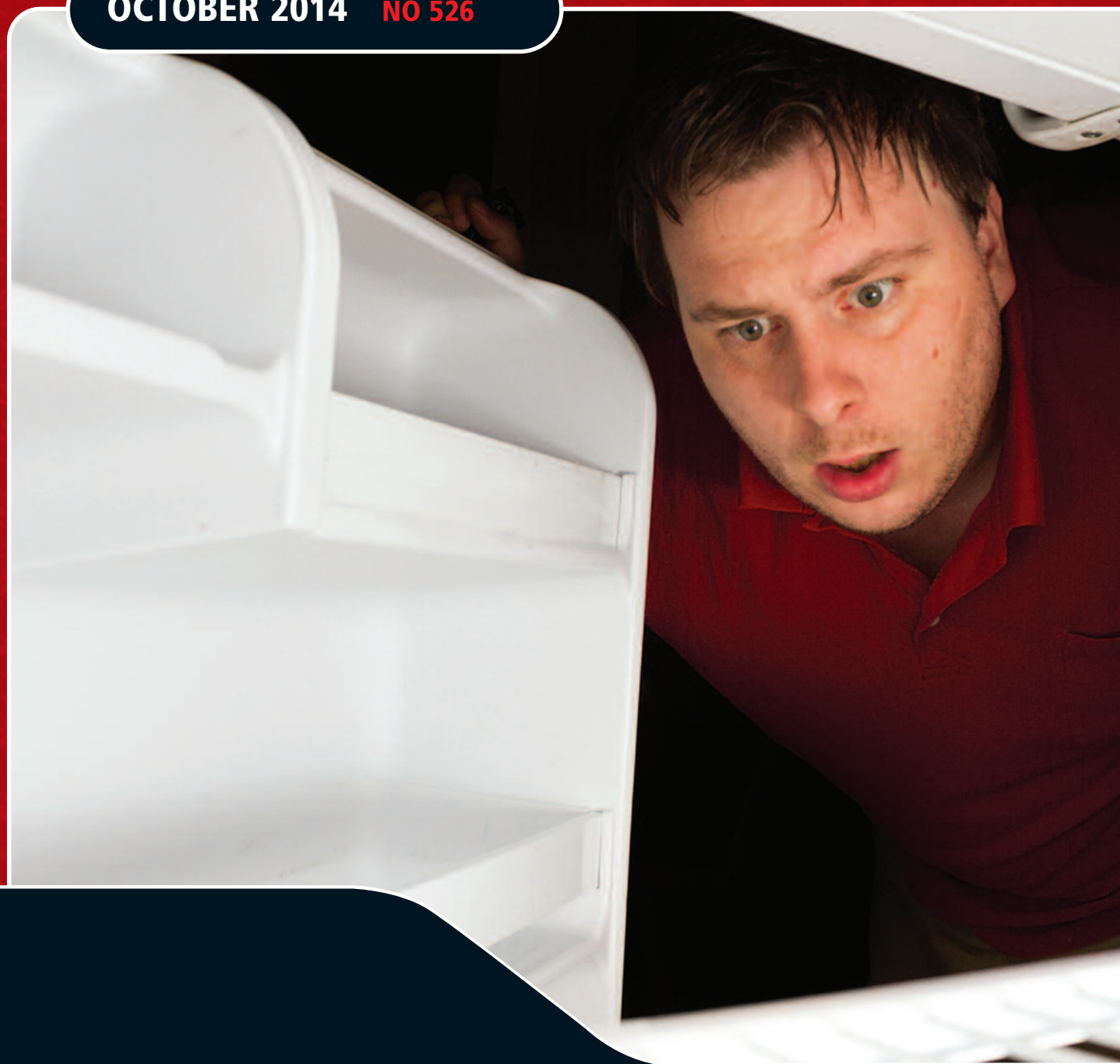
WHEN FRIDGES ATTACK

: : INSIDE THIS MONTH : : : : :

or

THE OR SOCIETY

DIAMOND JUBILEE
60 YEARS OF BETTER DECISIONS
1953 ◆ **2013**

www.theorsociety.com

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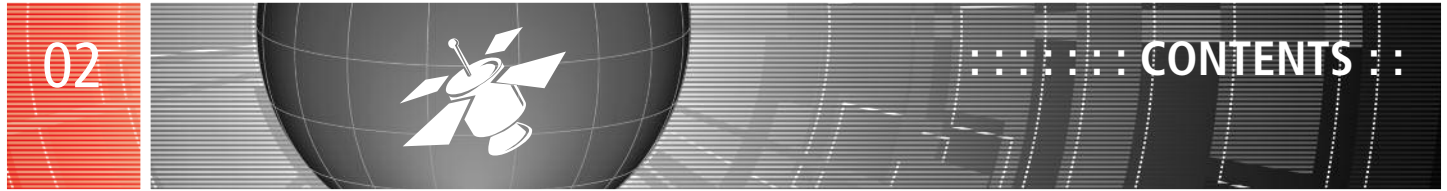
EDITORIAL

JOHN CROCKER

One of my colleagues, many years ago, said that the main purpose of conferences was to 'renew the faith'. Over the years, I have attended a good many conferences in many different countries. I believe the first one was an OR Conference at Loughborough in 1972 when the plenary speaker was Harold Wilson, who was Leader of the Opposition at the time if my memory serves me correctly. In those days, we had a 'banquet' on the Wednesday evening at which the men, at least, wore suits and ties and there was a rather long after-dinner speech – some things change for the better!

As you will see from Frances O'Brien's Leader, there were several changes at this year's conference at Royal Holloway: the full three-day programme, the extra plenary sessions, the greater involvement of the SIGs and so on. But for all that it still felt like an OR Conference with its healthy mix of academics and practitioners all feeling they were doing something worthwhile. There was certainly no signs that O.R. is a dying subject. True there was much more talk about Analytics and that it looks like this is here to stay but, in many ways, it is really not so very different from what many people in O.R. have been doing for many years (or, at least would have done, had they had the data and the computing power).

The opening plenary session at this year's conference given by President Professor Stewart Robinson raised a number of questions about Analytics and the OR Society. Should we be considering a change of name, should O.R. academics be writing more 'Analytics' papers, should more universities be offering Analytics-based courses and should the OR Society be doing the same. On the last count the latest list of courses for 2015 contains several which are aimed at those interested in Analytics and the OR Society is looking for more. The OR Society cannot exert a great deal of pressure on universities; however, if the subject is given the recognition of a professional society then courses are likely to follow. As to the number of 'Analytics' papers, there could be a number of reasons for the apparent shortage. If we were to look back to the early days of O.R., we would probably find that there were very few papers that mentioned O.R. (just as there are probably not many today that specifically mention it). Authors may feel that mentioning 'Analytics' might be seen as a reason for rejection (by OR journals) both because it may not be regarded as 'true' O.R. and it might be seen as 'jumping on the band-wagon'.

The question of changing our name is a difficult one. We cannot afford to lose very many more members so there is a reluctance to do anything to upset the more traditionalists. Also, over the past 60 years, there have been many pretenders most of which have disappeared or faded away. There is also the question as to whether adding 'Analytics' would raise our profile or make people think we are even more mathematical than we are.

Whilst we are considering the name, one advantage of being the first is that we 'The OR Society' have no need to add a qualifier such as 'British' or 'UK' so there should be no need for us to change our name (whichever way the Scots vote).

<OR>

Arup's transport planners achieve innovative transport solutions for clients around the world.

We shape more sustainable and efficient transport systems that bring environmental benefits and improved integration across modes and networks.

An opportunity has become available in our Melbourne Planning team for an experienced Transport Planner. The role will have a major focus on pedestrian planning for rail projects, encompassing all aspects of demand forecasting, station design, pedestrian planning and modelling and station capacity.

As a member of our Melbourne Planning team, you can expect to be involved in a number of exciting and high profile projects. Recent projects include Sydney Rapid Transit, Flinders Street Station Design Competition, Melbourne Airport Redevelopment and Brisbane Commonwealth Games.

For further information on this role please search for AJ104396 under the careers section at www.arup.com

ARUP

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Research funding

Research funding available for system efficiency and value for money in health and social care:

The Health Foundation's Efficiency Research Programme is an open call for innovative research ideas on system efficiency and value for money in health and social care.

We are inviting researchers to submit ideas on innovative approaches that support transformational change needed to ensure the long-term sustainability of health and social care in the UK.

We want to fund two or three experienced research teams to explore ways that health, or health and social care services can address the challenge of increasing efficiency and value for money, and providing more for less.

Each project will receive between £250,000 and £500,000 for research completed over three to five years.

Visit http://bit.ly/1mdhZ4j to find out more.

The closing date for applications is 12 noon, Monday 20 October 2014.

Fields medal winners
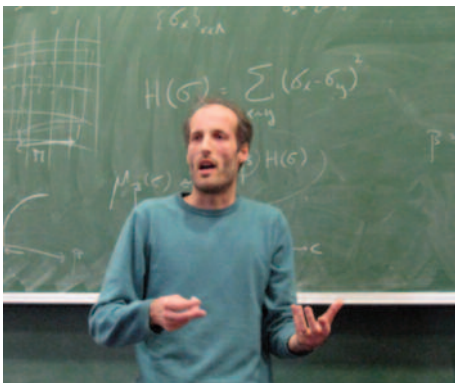
Professor Martin Hairer FRS

The winners of the 'International Medal for Outstanding Discoveries in Mathematics', better known as the 'Fields Medal', this year are: Austrian Martin Hairer FRS, University of Warwick; Iranian Maryam Mirzakhani, Stanford University (the first woman recipient); Canadian Manjul Bhargava, Princeton University and; Artur Avila, 35, a Brazilian-French researcher at the Institute of Mathematics of Jussieu in Paris.

The medal was established by Canadian mathematician John Fields in 1936. Since 1950, awards have been made to 2, 3 or 4 researchers every four years. The recipients must be no older than 40, because Fields wanted to encourage the winners to strive for 'further achievement' as well as recognise their success. It is generally regarded as the 'Nobel Prize for Mathematics'.

And the Rumelhart prize goes to

Michael I. Jordan, the Pehong Chen Distinguished Professor of Statistics and of Electrical Engineering and Computer Science at the University of California at Berkeley, a pioneer in learning inference and control in both humans and machines is the fifteenth recipient of the David E. Rumelhart Prize – the nearest thing to a Nobel Prize in cognitive science.

David Rumelhart (1942 - 2011) made seminal contributions to our understanding of the human mind, developing mathematical and computational approaches that still shape the field today.

More information on:
http://rumelhartprize.org/

Data Trust Deficit

According to a recent article posted on the Royal Statistical Society's website, there is a 'data trust deficit'. A survey by Ipsos MORI for the RSS suggests that public support for the sharing of personal data depends very much on who wants it and for what purpose. This even applies, although to a lesser extent, to anonymised data. It would seem that people are fairly happy for data to be used if it directly benefits them, as individuals, but less so if it is for the benefit of others and very much less so if it is to benefit private organisations.

Hetan Shah, executive director of the Royal Statistical Society said, 'Our research shows a 'data trust deficit'. In this data-rich world, companies and government have to earn citizens' trust in how they manage and use data - and those that get it wrong will pay the price.'

Sociable Mathematicians!

Being good at maths has never been more lucrative; likewise having high social skills. But, according to a study published by Cathy Weinberger, UCSB, having both is what really counts.

Weinberger studied data linking 1972 and 1992 adolescent skill endowments to adult outcomes. She discovered an increase over time in the labour market valuation of individuals with a combination of both cognitive ability and social skills. See http://bit.ly/1r0qJK3

The Bias Bias

Some O.R. experts believe that simple models are better than complex ones for solving problems, while others might disagree, but Laura McLay, a regular blogger on 'Alltops' Punk Rock Operations Research' recently said. 'Using the right data is MUCH more important to our models performing well than using more sophisticated models'.

To reinforce this statement, Laura has quoted a number of references including a paper by Henry Brighton and Gerd Gigerenzer that provides a number of reasons why we tend to make models overly complex and asks the question, 'Do complex

problems require complex solutions?'
The paper entitled 'The Bias Bias' is available as a PDF download at: http://bit.ly/1m9VSvL

Analytics just keeps on growing

The top four analytics software companies, Oracle, SAP, IBM and Microsoft made some £12 billion or 53.4% of world sales according to IDC's 'Worldwide Business Analytics Software 2014–2018 Forecast and 2013 Vendor Shares'. They are also predicting an annual growth rate of 9.4% over the next four years from £23 billion in 2013 to around £36 billion in 2018 while 'content analytics applications' is expected to grow from £570 million in 2013 to approximately £1.2 billion in 2018.
More information on: http://bit.ly/1qGMGR7

RapidMiner Cloud

The beta release of RapidMiner Cloud, which allows businesses to deploy analytics into cloud resources for analysis via single-button-access is now available. RapidMiner Cloud integrates more than 300 cloud data sources including Amazon S3, Dropbox, Salesforce.com, and Twitter. It is one of a new range of predictive analytics and is available via subscription only service from $39 per month per licence. For more information, visit www.rapidminer.com.

Too much of a good thing!

Instagram, the fastest-growing social media platform, with 40.5 million users logging on monthly, can now be utilised by business as a marketing tool via Instagram Analytics. This is a set of analytical tools that provides a 'dashboard' for its users to gain account insights, ad insights and ad staging by trawling and refining data obtained from Instagram feeds. According to Forbes this might turn out to be the self-same aspect that ultimately deters users from adopting it and possibly causes IT Departments to ban it.

More information on Instagram analytics tools can be found at: http://bit.ly/QCbUj4

Short range EVs best!

A study undertaken by Zhenhong Lin, a senior R&D staff member at the Oak Ridge National Laboratory in Knoxville, Tennessee explains that until battery cost is cut to £60 per kWh from around £300, the majority of battery electric vehicle (BEV) customers will be better off by choosing one with a range below 100 miles.

The electric driving range of a BEV was optimised separately for each of 36,664 sample drivers who took part in the study. The paper 'Optimizing and Diversifying Electric Vehicle Driving Range' explains the dominance in the BEV market of products with an electric range below 100 miles and discusses some of the R&D implications.
The study can be accessed via: http://bit.ly/1yfwwBS

Safe to fly?

Despite the three catastrophic incidents - Malaysia Airlines Flight 17, Air Algérie Flight 5017 and Malaysia Airlines Flight 370 - Professor Arnie Barnett, Sloan School of Management, who was our year 2000 Blackett Memorial Lecturer says,' it's actually quite safe to fly!'

He recently appeared on Voice of America in a 22 minute segment discussing aviation safety and on the BBC radio programme More or Less concerning 'Fear of Flying'. Per passenger mile, flying, particularly between first world airports, is by far the safest form of travel.

Please see: http://bit.ly/1wChzb9
http://bit.ly/1pj2a7d

Rapid Optimisation for KLM

KLM Royal Dutch Airlines is utilising software from QinetiQ to optimise its workforce planning strategies for pilot management. Prior to the implementation KLM's planners could take up to a month to complete the development of a three-year plan, now it only takes a day.

The method works by simulating the results of different strategic decisions in order to make the optimal choice. This is helping them cope with a pilot shortage. It also deals with long-term issues such as changing aircraft types and retirements.
See: http://bit.ly/1u67TB8

Ebola

Simulation has come to the aid of researchers trying to predict outcomes for the West African Ebola outbreak. Computational epidemiologist, Bryan Lewis, at Virginia Tech is constructing models of disease transmission. He uses the official numbers of how many people have died or been infected, even though they are probably underestimates. There is also uncertainty about how the disease is spread, but even with this limited knowledge, his models have been able to predict the course of the epidemic so far.

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Meanwhile Alessandro Vespignani, at Northeastern University is creating Ebola models, using information about air travel and other kinds of transportation.

The indications are that Ebola could find its way to Ghana, Gambia, and Senegal but is unlikely to reach North America or Europe within the next six weeks. More outbreak information on http://n.pr/1u0hv40

War Games

QinetiQ has been awarded a five-year contract to train soldiers and pilots in a virtual world. The work will involve creating a virtual battlefield which will enable pilots and army commanders to train together in simulators before going abroad.

: : : : : : : IN BRIEF : :

The system – at the Air Battlespace Training Centre at RAF Waddington in Lincoln – links together aircraft simulators, ground forces' control tents and even individual troops so they can train on working in combined operations.

Once the training operation is over, recordings of it can be reviewed in mass debriefs allowing soldiers and pilots to see the events from many different perspectives.

More information at:
http://www.j25.defencealert.com/index.php/defence-industry/95-qinetiq/12481-qinetiq-wins-33m-military-simulation-contract

Is Iron Dome effective?

The Iron Dome system, credited with saving lives during the recent conflict with Hamas has recently been scrutinised by experts at INFORMS. The result is 'Modeling Short Range Ballistic Missile Defense and Israel's Iron Dome System', by Michael J. Armstrong of the Goodman School of Business, Brock University, in Ontario and published in August.

Apparently, Iron Dome was very effective in 2012 but somewhat less so in the latest conflict. Indeed, some are saying it was so ineffective in 2014 that it made little impact.

The study can be accessed at:
http://bit.ly/ZphkT6

SUBMIT YOUR
IN BRIEF STORIES TO
InsideOR@theorsociety.com

IN BRIEF articles compiled by
John Crocker and
Nigel Cummings

REGIONAL SOCIETIES

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

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

CONFERENCE NEWS

EVENT:	Blackett Memorial Lecture	DATE:	26 November 2014	VENUE:	Grocers' Hall, London
EVENT:	EURO2015	DATE:	12 (welcome), 13 – 15 July 2015	VENUE:	University of Strathclyde, Glasgow

Career development training
Approved courses in O.R. and Analytics

INTRODUCTION TO O.R. FOR NON-O.R. PROFESSIONALS

1 October, Birmingham
£445 + VAT for OR Society members

Course provider:
Mike Moir

This course will help your clients, colleagues and others in your organisation that interact with O.R. professionals to understand the way O.R. people see the world, work and solve problems. Identify when and how O.R. professionals can really help, work more closely – and more effectively – with O.R. people and blend O.R. into an overall consultancy service offering. They'll also see how some apparently simple problems can go terribly wrong without an O.R. style intervention.

Learn about the origins of O.R.; How O.R. concepts like measurement, queueing and simulation are everywhere; how the media 'stole' decision making, forecasting and game theory from O.R.; See the world through O.R. tinted glasses

FUNDAMENTALS OF PRICING STRATEGY AND REVENUE MANAGEMENT

2 October, Birmingham
£595 + VAT for OR Society members

Course provider:
Joern Meissner

This course will help you to think differently about pricing and become aware of the options a company has when pricing products and services. You'll learn how to analyse customer needs, assess alternative pricing methodologies and determine when it makes sense to compete on price and when it does not. The course will help you to maximise customer satisfaction by successfully overcoming price sensitivity.

Change customers' price perceptions to capture more value; Become familiar with the more technically challenging aspects of pricing; Optimise pricing strategy by determining the value of your product or service; Understand the concepts and implementation of various pricing strategies; Combine pricing and revenue management strategies to optimise

PRACTICAL PROCESS IMPROVEMENT USING LEAN AND 6-SIGMA

7 October, Birmingham
£445 + VAT for OR Society members

Course provider:
Ian Seath

This course cuts through the usual consultancy jargon surrounding Lean and 6-Sigma and provides take-away practical tools that will help you to improve your organisation's processes. You'll practice improving a 'real' process in a case study environment to identify the success and failure factors. You'll understand how to decide which approach, if any, is best for your process. You'll learn:

Learn how Lean and 6-Sigma differ, yet are complementary approaches to process improvement; how to set up and define a process improvement project; how to use appropriate tools to map, measure and analyse business processes and how to design a Lean value-adding process

INTRODUCING SOCIAL MEDIA FOR RESEARCHERS AND CONSULTANTS

8 October, Birmingham
£400 + VAT for OR Society members
Hands on course
Course provider
Francisco Marco-Serrano

Most social media training courses provide a basic general introduction to the subject and then you're left on your own to see how you can put it into action. This course provides a sound understanding of the concept of social media, learn how to choose which social networks to join and which benefits you can get from social media. You'll also get expert advice on how to create your own social media marketing campaigns and help with planning an individual strategy.

You'll get started with your presence in social media; Connect and interact with peers in digital social networks; Enhance your marketing through social media campaigns

ANALYTICS IN DEFENCE AND REALPOLITIK

14 October, Birmingham
£625 + VAT for OR Society members
Hands on course

Course provider:
Jim Bryant

Find out about the latest developments in drama theory (an extension of game theory) and how they can help you to make sense of, and better manage, your own or your organisation's relationships with others. You'll discover new ways of dealing with the dilemmas that everyday life presents, and encouraging others to want what you want.

Understand how, and how easily, collaboration can morph into conflict and vice versa – and what to do about it!; 'Read' other people better and work on some of the current challenges facing you and your organisation and to work towards solutions; Appreciate what it is that influential people do when they interact with others.

COMING SOON:
4-5 November – Agent-based modelling: what, when and where
13 November – Using soft systems methodology
14 November – Practicing soft systems methodology NEW FOR 2014
18-20 November – An introduction to optimisation with FICO Xpress NEW FOR 2014

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

SOME THOUGHTS FROM OR56

JOHN CROCKER

We have banqueted in some remarkable and unusual places, York Railway Museum, comes to mind, but few can boast the opulence of the dining hall in Founder's Building within the Royal Holloway campus.

On our way to table, we were also given a guided tour by Vice Principal Professor Robert O'Keefe, of the Picture Gallery with its interesting collection of mainly Victorian British artists including one by Edward Landseer (worth a fortune) that the young ladies found too frightening to look at while sitting their exams.

Unlike the last visit of the Society to RHUL, the weather was particularly kind so we were able to enjoy the walks through the 100 acre wooded campus and eat our lunches al fresco. As always, the three days were divided among plenary sessions, papers, workshops and, of course, social events. The Pub Quiz was very popular but it did favour those with a good knowledge of the metropolis and plenty of stamina.

One of the plenary sessions was a debate 'Is good enough, good enough?' between on the one hand Optimizing, supported by Jacek Gondzio versus Konstantinos Katsikopoulos who was making the case for 'Satisficing'. Operational researchers have never had a good reputation for making decisions, indeed, many would argue that it is our job to quantify alternatives in such a way that the decision makers can come to the 'right' conclusion. A good debate is typically characterized by the audience coming away with many unanswered questions on their minds.

Konstantinos Katsikopoulos

Jacek Gondzio

There are many problems for which an exact solution can be found and there are many algorithms available that can be used to solve these problems. There are others, however, for which we may not have all the facts. Konstantinos gave an example of buying a house for which there were several competing criteria including price, distance from the city, size of garden, views and so on. He suggested that it was possible to produce an algorithm based on scaling the various parameters and giving different weightings to them but this was unlikely to produce the best result. Jacek argued that there were cases when only the optimum solution was good enough such as with blade design in gas turbine engines of aerodynamic design of the body of Formula 1 racing cars where one was always striving to be better than the opposition in which 'good enough' was rarely 'good enough' for very long.

As David Lane highlights in his article (ibid) sometimes we can spend a lot of time finding the exact or even approximate solutions to the wrong question. Knowing the best method to solve a problem is one thing but knowing the best problem to solve is quite a different kettle of fish.

So, is RHUL the best venue for an OR Conference? It is certainly a good one but if we were expecting 3000 delegates rather than 300 or if we had had a wet week rather than a warm, sunny one or we had wanted to cater specifically for disabled delegates then RHUL would probably not have been our first choice. You can please some of the people some of the time but…

As always, the organizers did a truly remarkable job – everything seemed to go so smoothly.

<OR>

Lancaster University
MANAGEMENT SCHOOL

Industrial Liaison Manager

Department of Management Science

Salary: Grade 8 Currently £38,511 to £47,328
Closing Date: Monday 29th September 2014
Interview Date: Monday 13th October 2014

Reference: A1074

We are seeking to appoint an Industrial Liaison Manager to develop contacts and relationships between academic staff in the Department of Management Science and STOR-i Centre for Doctoral Training with outside organisations.

A key part of the role will be to support the setting up of suitable projects, sponsored by outside organisations, to be undertaken by students taking MSc programmes in the Department of Management Science during the summer months. In addition, support is required for the STOR-i Doctoral Training Centre to develop industrial contributions to the programme including the development of suitable PhD projects involving staff from both the Departments of Management Science and Mathematics & Statistics.

More broadly, it is expected that you will develop and maintain a network of outside contacts and promote opportunities for staff to work with outside organisations on activities that support research and impact. You will be expected to liaise with the University's central business engagement team.

This new post is an exciting opportunity to bring together leading Lancaster academics involved in quantitative analysis and modelling with large and small commercial enterprises and other organisations to the benefit of all concerned.

We welcome applications from people in all diversity groups.

Go to http://hr-jobs.lancs.ac.uk/ for more information and how to apply.

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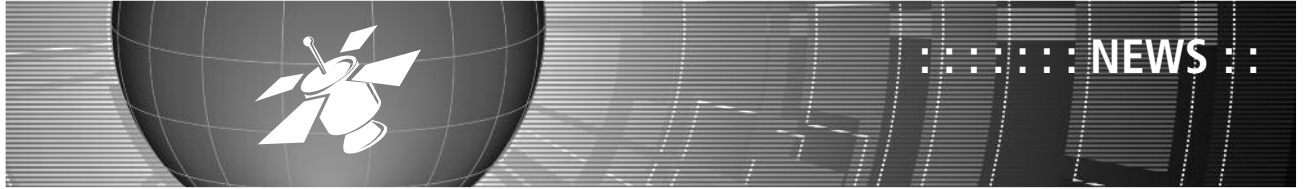
WHAT A DIFFERENCE A 'YEAR' MAKES: PRO BONO O.R. ONE YEAR ON…

FELICITY MCLEISTER, PRO BONO PROJECT MANAGER

A year ago I had never heard of the term 'Operational Research' or in fact heard of 'The OR Society'.

One year on the terms have become part of my daily vocabulary and one of my aims is to ensure other people have heard about The OR Society and in particular how significant operational research is and the enormous impact it can have in benefiting the world in which we live.

My first exposure to operational research was The OR Society's annual conference (OR55) last September. I was amazed at the ways in which operational research could be used in all sectors and how significant it was in helping to increase efficiency and effectiveness, reduce costs, develop strategy and much much more. As OR56 starts today I am able to look back at the last year and reflect on how operational research has been used to impact the third sector.

I have had the pleasure of managing the Pro Bono O.R. project which is a service provided on behalf of The OR Society to Third Sector organisations (UK only) in order to provide them with access to O.R. at the cost of expenses only.

The aims of the Pro Bono O.R. scheme are:

- To help Third Sector organisations to do a better job;
- To promote O.R. in the Third Sector;
- To give O.R. analysts an opportunity to practise in a wider arena and widen their skills.

We found these were some of the problems the third sector was facing:

- 'We have lots of different options for the future but it's impossible to decide which to choose in such uncertain times.'
- 'We're under huge pressure to do more with less, and we don't know how we're going to do it.'
- 'It's hard to stay objective when we're faced with such emotionally charged decisions.'
- 'We know we're doing a good job – but how can we prove it?'

A large part of my role has been promoting and increasing awareness of the project to both organisations who could benefit from pro bono O.R. and volunteer analysts who work on the projects.

Over the last 12 months we have had interest from 60 organisations: 6 projects have been completed; 13 are in progress; 3 are being scoped and; a further 10 are in the initial enquiry stage.

Information on the completed case studies can be found on the webpage: http://www.theorsociety.com/Pages/Probono/Probono.aspx

I have recruited 100 new volunteers since September 2013 and we now have over 200 on the database. Of those around 130 are active and ready to work on projects. These volunteers are made up of both members of the society and non-members. In the past year we have advertised 21 projects to our volunteers, 54 of the volunteers have applied to work on projects and of those 28 have worked or are currently working on projects.

It has been really rewarding to hear how successful this project has been both from the organisations and the volunteers.

Here's what a few of the organisations have had to say:

'We've benefited hugely from your work and support in all areas of the project, and from an organisational perspective you've enabled us to take a highly professional approach to increasing the efficiency of our charity.'

'The work is already supporting our planning and development for next year and allowing us to focus our thoughts and decisions on the places of most importance for our organisation'

'Brilliant – it makes the predictions of risk visible. This will be so useful'

Here is what a few of our volunteers have said:

'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'

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

'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'

If you are an organisation that would like to receive Pro Bono O.R. support or have the skills to become a volunteer, please do not hesitate to get in touch. Please visit: http://www.theorsociety.com/Pages/Probono/Probono.aspx or send an email to felicity.mcleister@theorsociety.com

<OR>

UON 2025 VISION

The University of Newcastle aspires to be a global leader in each of its spheres of achievement.

Through engagement with partners, the University will deliver world class innovation to support the development of strong regional communities.

PROFESSOR OF OPERATIONS RESEARCH

**School of Mathematical and Physical Sciences
Faculty of Science and Information Technology**

Under the leadership of the Vice-Chancellor and President, Professor Caroline McMillen, the University of Newcastle is delivering on its ambitious *NeW Directions Strategic Plan 2013 – 2015*, the University's response to a radically changing global higher education landscape. As we continue to drive world-class education, research and innovation outcomes, the University is recruiting outstanding talent to join our senior team.

An opportunity exists for an outstanding individual to provide vision and leadership for the optimisation / operations research discipline. The successful candidate will promote and foster a collaborative, dynamic, productive and globally competitive research environment through research collaboration, external grant income, publication outputs, and research higher degree graduates. The promotion of excellence in teaching and learning through appropriate curriculum development and delivery is also a key requirement of this role.

The successful candidate will demonstrate leadership in operations research and its applications in any mainstream or emerging area of the field, as well as a successful track record of attracting research funding, underpinned by an understanding of the Australian research funding system and national research priorities.

This is an exciting time to be part of the Faculty of Science and Information Technology. This position offers exceptional opportunities to lead a strong team of academics in fundamental and applied research and to collaborate with supply chain and food technologies to bring together industry and academics to achieve optimal outcomes.

The Professor of Operations Research is offered as a full-time, ongoing Professorial (Academic Level E) position. An attractive remuneration package will be offered to the successful candidate.

Initial enquiries, in confidence, should be made to Dr Rosalind De Sailly, De Sailly Consulting, on **+61 (0) 414 574 945** or email **OperationsResearch@desailly.com.au**
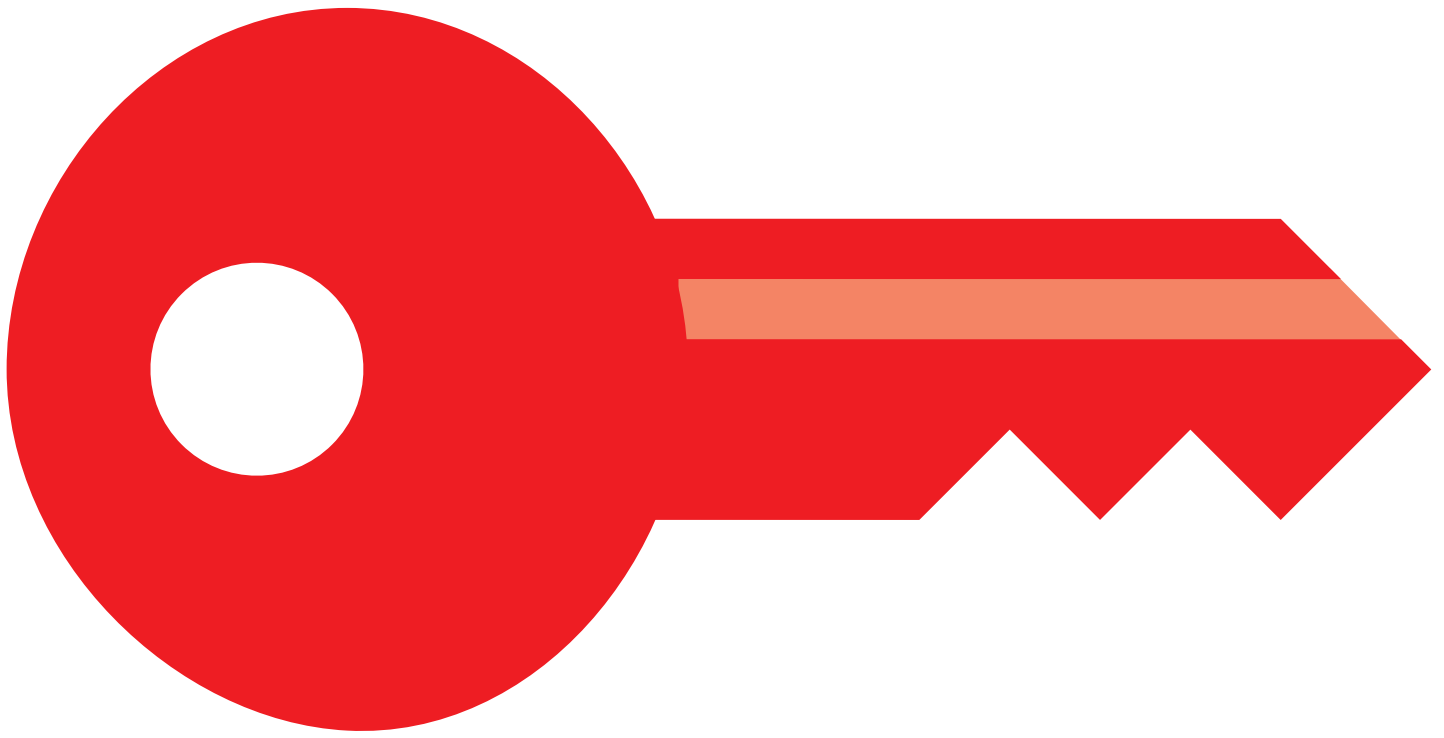
Applications close Friday 3 October 2014.

The University of Newcastle values equity and diversity.

www.newcastle.edu.au/futurestaff

EOWA
**Employer
of Choice for
Women**

UNLOCK YOUR FUTURE

IN OPERATIONAL RESEARCH (O.R.) AND ANALYTICS

O.R. CAREERS OPEN DAY

WEDNESDAY 19TH NOVEMBER 2014

MILLENNIUM POINT, BIRMINGHAM • 10AM TO 4PM

WE ARE PLEASED TO CONFIRM THAT THE FOLLOWING EXHIBITORS WILL BE ATTENDING:

ACTICA consulting · Aston Business School · BOEING · BRITISH AIRWAYS · British Gas · Capgemini · CARDIFF University

CORDA Delivering Successful Futures · datatech analytics · Deloitte. · [dstl] · dunnhumby · Expedia · EY building a better working world · GORS

IBM · Lancaster University Management School · Loughborough University · Nationwide On your side · NATS · PROSPECT RECRUITMENT

QinetiQ · SIMUL8 CORPORATION · University of Southampton · sparx · steer davies gleave · TUI Travel PLC · wbs

UNLOCK YOUR FUTURE:
REGISTER AT WWW.THEORSOCIETY.COM/CAREERSOPENDAY

THE OR SOCIETY

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Blackett Memorial Lecture

The Society is pleased to announce that the 2014 Blackett Memorial Lecture will be given by

Professor Sir Bruce Keogh
National Medical Director, NHS England

Sir Bruce Edward Keogh, KBE, FRCS, FRCP, (born 24 November 1954) has been Medical Director of the National Health Service in England since 2007 and National Medical Director of the NHS Commissioning Board (NHS England) since 2013.

on

Wednesday 26 November 2014

at

Grocers' Hall, Princes Street, London, EC2R 8AD
www.grocershall.co.uk

Grocers' Hall is situated in the heart of the City of London in a private courtyard opposite the Bank of England. A one minute walk from Bank Station (exit 1), which is served by the Central, Circle, District and Northern Underground lines as well as the Docklands Light Railway and Waterloo and City line.   Moorgate, Liverpool Street and Cannon Street British Rail stations are all just a five minute walk away.

There is no charge for attendance at this event. To register and receive joining instructions, please go online to www.theorsociety.com/blackettlecture and fill in the online reservation form or contact Hilary Wilkes on hilary.wilkes@theorsociety.com

Lecture at 4.30 pm

(Tea and biscuits at 4.00 pm; Drinks reception 6.00 – 7.00 pm, after the lecture)

The title and abstract of Prof Keogh's lecture will be announced in due course.

WHEN FRIDGES ATTACK

NIGEL CUMMINGS

Each September the British Science Festival is held in a different UK city, the festival is a celebration of science, engineering and technology, and 2014 was the year it was held in Birmingham in partnership with the University of Birmingham, between 6-11th September, and the OR Society got involved in sponsorship relating to the 2014 Mathematical Sciences Presidential Lecture there.

This lecture was entitled, 'When fridges attack: big data and intelligent machines' and was presented by Professor Peter McOwan, Queen Mary, University of London, with the help of Louis McCallum to a full arts centre auditorium.

Professor Peter McOwan

Professor McOwan began by telling us that domestic refrigerators were only invented a hundred years ago and they did nothing more than keep food cool and provide ice for cocktails. Now, just 100 years later, it was possible to buy domestic refrigerators which were Internet connected and have sufficient intelligence to know when they were running out of stock, trigger alerts and even transmit orders to replenish stocks.

Such refrigerators he said, were classed as 'smart'; they were part of the 'Internet of Things' (IoT). We live in a world where the interconnection of uniquely identifiable embedded computing-like devices within the existing Internet infrastructure constantly monitor our activities and 'enriches our lives'.

IoT offers advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications. What happens if it all goes wrong? Professor McOwan raised some doubt in our minds in his lecture, about the safety and security of such devices, and quite rightly so.

Internet connected devices can, it seems, be hijacked by cyber terrorists or at the very least, email spammers if the security protocols which are enabled within their programming are insufficiently sound to resist the intrusion of 'hacking'. Do you want a machine intelligent, sensor driven lighting system that will switch all your lights off as you are going down stairs at night plunging you into darkness, or an intelligent audio system that will lull you gently to sleep then trigger a 'terrorist controlled' central heating system that will 'cook' you in your beds while you slumber? No?

This is where maths comes in to protect us all, the application of machine learning, powered by maths, to such technologies could go some way, so long as it is rigorous, to ensure that smart machines remain smart, safe and really do enrich our lives.

Clustering algorithms can be applied to smart, machine-generated data to help us understand the trends lurking within the data. Predictive analytics could be applied too to, our smart fridges. This might result in them offering dietary advice advising us what to eat and what not to eat – reprimanding a midnight raider, perchance!

Our smart fridges could also keep us healthier, they could communicate with our general practitioner's smart desktop PCs and, 'spill the beans' about our dietary indiscretions too. Now this may seem innocuous enough, but what if, and 'IF' is a hugely influential word here, such data were applied to decisions relating to life expectancies for insurance policies, to the provision of credit, or to projected viability healthy or unhealthy individuals' tenure of employment?

Professor McOwan also provided visuals and commentary of a machine intelligence experiment in which a robot with simplified but expressive and empathic facial mannerisms could be integrated into human society. He showed us an example of how biomimetic and machine learning could allow such devices to find patterns and make predictions which could anticipate our 'human' needs and reactions.

He continued his demonstration by providing examples of **LIREC**, a research project which was developed to allow scientists to gain understanding of how to design digital and interactive companions that can develop and read emotions and act cross-platform. He followed with a 'cute' robotic dinosaur, controlled by smartphone

:: NEWS : : : : :

apps, and then showed how, when its power ran out, its 'personality' could be transferred from its physical state to the memory of the smartphone controlling it, this he described as, 'Migration between bodies'.

It was clear from Professor McOwan's enthusiastic delivery throughout his lecture, that he believed 'smart' technologies would be good for us all. In the last 30 minutes of this 90-minute lecture, Louis McCallum, Queen Mary, University of London demonstrated 'Mortimer the Musical Robot'.

Researchers at Queen Mary University of London have developed a robot that can interact with musicians, and even influence the way they play. Louis enlisted help from the audience, and a 'young musician' was encouraged to step forward and play some tunes on a piano style keyboard.

Throughout the demonstration, the audience could see Mortimer's robotic face projected on a large screen in front of them and see how it changed as Mortimer began to 'hear' the musical notes generated. Then, as if by magic, Mortimer outputted a syncopated drum beat.

After this demonstration, both Louis and Professor McOwan hosted a lively Q&A.

Professor Peter McOwan is a Professor of Computer Science in the School of Electronic Engineering and Computer Science at Queen Mary, University of London. His research interests are in visual perception, mathematical models for visual processing, in particular motion, cognitive science and biologically inspired hardware and software and science outreach. He was elected as a National Teaching Fellow in 2008 by the Higher Education Academy

<OR>

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THE OR SOCIETY

:::::::::NEWS : :

REFLECTIONS FROM ICORD 2014

JOE KAKENENO

The International Conference on O.R. for Development, ICORD 2014, which was held at the University of Lleida, Catalonia, Spain was a great success and a 'never miss' event.

A total of 17 papers were presented, discussed and reacted upon by participants from different parts of the world. It was a great privilege for me to be given an opportunity to present our paper on the *'Usability of the Structured MCDM Methodology in Supporting Problem Structuring and Improving Participation in Tanzanian Rural Communities'*.

In that paper, Prof. Cathal Brugha (cathal.brugha@ucd.ie; www.ucd.ie) and I promote the use of generic decision structures which are based on Nomology, the science of the laws of the mind. We challenge the suggestions that problem structuring is an 'art' that is left to the individual ability of the facilitator. It was demonstrated that, unlike the traditionally used Problem Structured Methods (PSMs) such as Cognitive Mapping, SSM and others, the Structured MCDM Methodology which is based on Nomology, is flexible and transferable to similar problem contexts and various situations. It can more easily support distributed participatory decision-making or be integrated into a Participation Decision Support System. It was applied in a new geographical area (ie Tanzania) other than Europe where it originated from, with a different culture, language and level of development. Our

contribution is likely to stimulate emerging research and debate on participatory process design, implementation and evaluation.

In order to apply the methodology effectively, we endeavoured to integrate commonly used participatory tools, particularly seasonal calendars, village maps and pebble distribution techniques[1] with the decision analysis methodology; and apply them within the existing participation framework in order to select the most preferred irrigation method from available options. Effective facilitation was also required to control influences of experts and rule makers; and power relationships. It was possible for the participants to share and decide effectively because the methodology was applied in the national language, Swahili.

> 'A total of 17 papers were presented, discussed and reacted upon by participants from different parts of the world.'

The comments and reactions on our paper from the participants at ICORD will be very useful in our future work. Apart from these, there were presentations, discussions and reactions that were relevant to the Tanzania Ports Authority which I work for. These include demonstration of the use of such O.R. tools as simulation, resource allocation, transport networks, scheduling and timetabling; only to mention a few. Indeed, my participation in the conference was very useful to me.

Finally but not least important, I appreciate the financial support given by the OR Society to help me to attend the ICORD. Many thanks.

---

[1] *The technique involves the distribution by participants of pebbles across the decision criteria to represent weights. Sometimes seeds or stars are used instead.*

<OR>
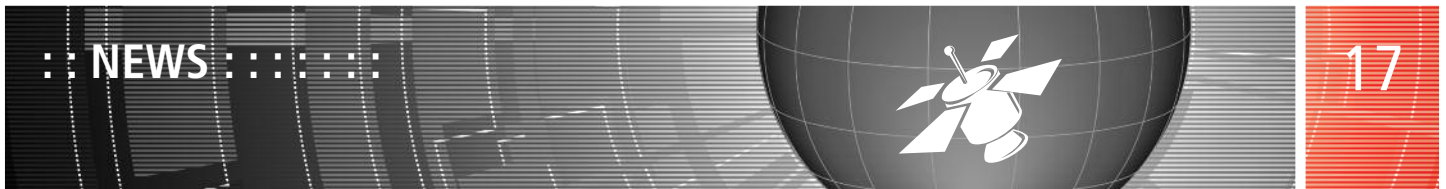
Simulation Modelling in Health and Social Care

Monday 17th November 2014
Warwick Business School
Room M2
9.00 am – 5.00 pm

Fostering links between simulation research, practice and the NHS.

The OR Society Simulation Special Interest Group and Warwick Business School are pleased to announce a one day seminar and workshop aiming to improve and foster links between simulation research, practice and the NHS.

Simulation modelling has been used widely in health and social care from modelling four hour waiting time targets in accident and emergency departments to understanding the dynamic behaviour of a whole system of care. However, simulation is still rarely used by the NHS and many healthcare professionals are unfamiliar with it. This workshop aims to explore how links between simulation research and practice can be improved.

The workshop will be divided in two parts. During the morning, speakers with extensive experience in research and practice of simulation modelling in health and social care will provide an overview of their experience through their personal work in the area. In the afternoon, there will be a simulation market place where delegates can see and interact with practitioners/researchers and engage with a selection of simulation models from health and social care. The day will finish with a panel session debating the opportunities and challenges in fostering links between simulation research and practice in the NHS.

The special interest group particularly encourages attendance of delegates from the NHS and its associated organisations and from the world of simulation practice.

Refreshments and lunch are provided. **Registration costs £20 + VAT.**

For all enquires on the workshop please contact Martin Kunc (martin.kunc@wbs.ac.uk) or Thomas Monks (thomas.monks@soton.ac.uk)

For all enquiries related to registration please contact Jennie Phelps (jennie.phelps@theorsociety.com)

To book online please go to :
http://www.theorsociety.com/DIF.aspx?page=SimulationWorkshop

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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.

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SPECIAL INTEREST GROUPS

ANALYTICS NETWORK

CONTACT Sayara Beg
EMAIL: ANChair@theorsociety.com
Lunch & Learn Case Study: Improving patient care with predictive analytics

Date/Time: Tuesday, 30 September 2014 from 12.30 – 15.30
Venue: Dell Software, 46 New Broad St, London, EC2M 1JH
Speakers: Dr. Sergio Pagliarni, Consultant Ophthalmic Surgeon from University Hospitals Coventry & Warwickshire NHS Trust

With the rising costs in healthcare, it's crucial healthcare providers look to improving monitoring of patient outcomes for clinicians and understand effectiveness of treatments across the board using regular audits and costs reporting. Many doctors are starting to turn to analytics to leverage their data and provide better care.

Join us for this insightful Lunch & Learn as Dr. Sergio Pagliarni, a Consultant Ophthalmic Surgeon from University Hospitals Coventry & Warwickshire NHS Trust, discusses his use of analytics for analysis of eye treatments and clinic performance. In this session, you'll learn:

• What type of data is being used
• What improvements have been made to procedures
• How patient care has been improved
• How Dell Statistica was the platform of choice

Agenda (Free Event):
Arrive 12H45 ish…grab a coffee
13H00 Introductions
13H10 Sergio – Clinical Outcomes Monitoring & Analysis
14H00 Matt Wolken, VP GM Dell Software– DSG IM 15 minute
14H15 Grab a plate..Meet n Greet
15H30 Everyone out…
16H00…Turn off the lights…a beer will do…

We'll provide the lunch as you learn about some of the advances being made in predictive analytics. Come to 46 New Broad Street, London EC2M 1JH - Conference Floor Seminar rooms 1, 2 & 3 to see some of the most advanced analytics practices used in real-world situations.

Register at - http://www.eventbrite.com/e/lunch-learn-case-study-improving-patient-care-with-predictive-analytics-tickets-12855492123

CRIMINAL JUSTICE

CONTACT: Ian Newsome
TEL. DDI: 01924 292244 **Extension:** 22244
EMAIL: ian.newsome@westyorkshire.pnn.police.uk
Autumn meeting of the CJ special interest group
Date/Time: Tuesday, 18 November 2014 at 13:30 - 16:30
Venue: London Mathematical Society, Russell Square, London
Speaker: various

We have four most interesting talks lined up this time: Crime prediction (using a system designed for predicting earthquakes which is being trialled in Kent); case studies on the use of SSM in Offender management and Policing; How the Home Office is building a data analytics capabiity;   and Structured debriefing methods. Our speakers are Graham Down (Kent Police), Kees van Haperen (VH2 Ltd), Nick Manton (Home Office) and Caroline Bridgman (ex Met Police).

Space is limited so please contact suemerchant@hotmail.com as soon as possible if you would like to attend.

DEFENCE

CONTACT: Noel Corrigan
EMAIL: noel.corrigan@baesystems.com
CHAIR:
Alan Robinson
Chief Scientist, PCS Dept,
Defence Science and Technology Laboratory (Dstl)
Portsdown West, Portsdown Hill Road,
Hampshire, PO17 6AD
TEL: 02392 53 2839
EMAIL: arobinson@dstl.gov.uk
Joint Workshop Theme: 'Affordability, Value for Money and Decision Making'
Date/Time: Tuesday 18th November 2014 9.30am
Venue: The BAWA Centre, Filton, Bristol, BS34 7RG

A workshop will be held jointly by the Defence Special Interest Group and the Society for Cost Analysis and Forecasting. The workshop will be free to attend for all members of the OR Society or SCAF.

Affordability and Value for Money are some of the key elements in today's Decision Making process. Whether we are considering investment in a new capability, transition programme or optimising in-service support services – the issues remain the same.

: : NOTICEBOARD : : : : : :

The day-long event will start with registration at 0930, followed by a keynote address by Dr Syd Morley, Head of Scrutiny and Analysis, Ministry of Defence. This will be followed by seven papers from:

• Dr Dave Exelby, Decision Analysis Services Ltd
• Arjun Madahar, Defence Science and Technology Laboratory
• Andy Nicholls, PRICE Systems
• Andy Nolan, Rolls-Royce
• Steve Rowley, QinetiQ
• Colin Sandall, QinetiQ
• Lucia Retter and Dan Jenkins, RAND Europe.

There will be opportunities for discussion and networking throughout the day.

Lunch and refreshments throughout the day will be provided. The workshop is FREE to ATTEND for members of SCAF and the OR Society. Non-members are welcome to attend at a cost of £120.00 per delegate.

For further details please contact ndmorrill@dstl.gov.uk

SIMULATION
CONTACT: Christine Currie
TEL: 0238 059 3647
FAX: 0238 059 5147
EMAIL: christine.currie@soton.ac.uk
or **CONTACT**: Katy Hoad
EMAIL: Kathryn.hoad@wbs.ac.uk
Simulation in health and social care
Date/Time: Monday, 17 November 2014 at 9am-5pm
Venue: Warwick Business School

Fostering links between simulation research, practice and the NHS. Nov 17th Warwick Business School

The OR Society Simulation Special Interest Group and Warwick Business School are pleased to announce a one day seminar and workshop aiming to improve and foster links between simulation

research, practice and the NHS. The event will take place on 17th November at Warwick Business School, University of Warwick. Simulation modelling has been used widely in health and social care from modelling four hour waiting time targets in accident and emergency departments to understanding the dynamic behaviour of a whole system of care. However, simulation is still rarely used by the NHS and many healthcare professionals are unfamiliar with it. This workshop aims to explore how links between simulation research and practice can be improved.

The workshop will be divided in two parts. During the morning, speakers with extensive experience in research and practice of simulation modelling in health and social care will provide an overview of their experience through their personal work in the area. In the afternoon, there will be a simulation market place where delegates can see and interact with practitioners/researchers and engage with a selection of simulation models from health and social care. The day will finish with a panel session debating the opportunities and challenges in fostering links between simulation research and practice in the NHS.

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Refreshments and lunch are provided. Registration costs £20 + VAT.

For all enquires on the workshop please contact Martin Kunc (martin.kunc@wbs.ac.uk) or Thomas Monks (thomas.monks@soton.ac.uk)

For all enquiries related to registration please contact Jennie Phelps (jennie.phelps@theorsociety.com)

To book online please go to :
http://www.theorsociety.com/DIF.aspx?page=SimulationWorkshop

<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

:::::: **LEADER** ::

A NOVEL OR56

FRANCES O'BRIEN

'As ever, the success of the conference is wholly due to the volunteer efforts of others, namely the committee chaired jointly by Andy Harrison of FICO and Giles Hindle of Hull University, supported by Hilary Wilkes and others from the OR Society offices.'

Basking in the September sun at OR56, I pondered on what to write for this leader article – since my last leader had pointed to change with respect to the conference, I decided to report on progress.

OR56 had seen a number of changes made to previous conferences. These included different types of plenary sessions including a panel on Behavioural O.R. and a debate session with the title 'Is good enough good enough?'. It was also decided to make it a full three-day event rather than the traditional 2.5. This meant there were a good number of attendees present to hear the final plenary talk delivered by Permanent Secretary Dame Ursula Brennan (Ministry of Justice) about the role and benefit of O.R. & analysis within government.

The conference attracted over 170 papers and more than 270 attendees to the picturesque location of Royal Holloway in Egham, less than 20 miles from the centre of London thus putting it within easy reach of practitioners. As ever, the success of the conference is wholly due to the volunteer efforts of others, namely the committee chaired jointly by Andy Harrison of FICO and Giles Hindle of Hull University, supported by Hilary Wilkes and others from the OR Society offices.

Everyone's experience of the conference is different as there are so many possible pathways that can be taken through the programme. For me, this conference saw my first experience of speed networking and poster presentation, on the morning of the MAI (Making an Impact) day. After some giddy rotations around the speed networking event, I got used to the shrill of the whistle, which sounded every 60 seconds to prompt the next person to speak, and had got my spiel about who I was and what I was interested in down to quite a fine art, though I wouldn't want any of the readers to ask me to rattle it off without some further practice! During this activity I met over 30 people and had a good collection of business cards with my hastily scribbled notes of areas of expertise/interest as prompts for me to follow up after the conference.

The poster session was equally productive; I was given one minute to 'sell' the key themes in my poster and then had the luxury of what in comparison seemed like an eternity to engage in some interesting conversations with the huddle of people who'd come and stood in front of it – we covered points of clarification, alternative views, shared experiences and areas for development. Another first for me and for the conference was the debate session, organised by Vice President Sanja Petrovic. In her introduction to the debate, Sanja had explained that the debate was not going to be a confrontational episode between optimising and sufficing approaches, rather an opportunity for the audience to gain an appreciation of when it was appropriate to apply which approach –

and the event did exactly what it said on the tin, as they say. I look forward to future debates on similarly topical issues.

A highlight of the conference was the award of the President's Medal for work which had achieved the ultimate prize of influencing and changing UK government policy in relation to child protection – congratulations to David Lane and his team.

Ensuring success of an event means that some change is inevitable to ensure that the event remains attractive to potential attendees. Pavel Albores and Noel Corrigan worked to encourage the Special Interest Groups to lead their corresponding stream at OR56. This proved beneficial to both the SIGs and the conference, by on the one hand, bringing in more people and papers to the conference and on the other, promoting the activities of the SIGs to a wider audience and strengthening the work done at the SIGs. The opportunity was also taken at the conference to hold a meeting of representatives of the SIGs and Regional Groups.

The Society's conference programme relies on the time and energies of its volunteer members. If you have any ideas for future change be it incremental or radical, we would welcome your ideas… particularly if you are willing to commit some time and effort to help see them through.

<OR>

:: : : : : : NOTICEBOARD : :

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.

| Dimitrios Valsamidis | London | Christopher Eymery | Lancaster |
| Elliott Parsons | Bristol | | |

<OR>

:: : : : : : NOTICEBOARD : :

NEWS OF MEMBERS

NEW MEMBERS (October 2014)
The Society welcomes the following new members,
PATRICK ABBEY, London; SIMON FERADAY, Surrey; MAX GUILD, Glasgow; STEPHEN HO. Hants.; AMRIT MATHARU, London; MEIRION MORGAN, Cardiff; CALLUM STAFF, London;

and Reinstated members,
NIRA CHAMBERLAIN, Birmingham; ADRIAN NEWHALL, Birmingham; RAYKO TOSHEV, Finland; NOEL WILDE, Hants.;

and the following student members,
JOANNE BAUMGARTNER, Australia; ROSS DRAYTON, Sheffield; HANEEN GETHAMI, Nottingham; HOWEDI HOWEDI, Edinburgh; ARMIN KASHEFI, Middlesex; ROSMAINI KASHIM, Malaysia; PHILIPP KOSTUCH, Oxford; RODRIGO LANKAITES PINHEIRO, Nottingham; PHUOC LE, Southampton; EMIAO LI, Manchester; WAN MAT DESA, Malaysia; ALLEN MCKENNA, London; RACHEL NAYLOR, Warwickshire; KONSTANTINOS PETRIDIS, Greece; RAYMOND PHILLIPS, South Africa; PATRICK SAOUD, Lancaster; MOHAMMAD RAJABI, Edinburgh; BABOOSHKA SHAVAZIPOUR, South Africa;

ANASOFIA SIMARIA, London; DHEERAJ SONI, India; CHRISTOFAS STERGIANOS, Nottingham; UMAIR TANVEER, Coventry; LISA TURNER, Lancaster; LIANG XU, London; ELENI ZOGRAFIDOU, Greece;

Total Membership
2278

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 CandORS (Candidate Associate)
Nicola DRAKE, Katharine ETHERIDGE, Callum STAFF

Admit to the category of AFORS (Associate Fellow)
Richard WOOD

<OR>

'MAKING AN IMPACT' MAKES AN IMPACT

RUTH KAUFMAN

A whistle, a pile of croissants, and a mass of oddly-grouped chairs. If it's 8.30 in the morning, this could only mean one thing…

It's the Making an Impact ('practitioners') stream at the annual OR Society conference, kicking off with a fast and furious speed networking session. Specially designed for the shy and the bumptious alike, the session was energetically and enthusiastically managed by Ramune Gedgaudaite. Nearly 50 people braved the early morning start, and judging by the buzz of conversation, the vigorously nodding heads and rapidly-emptying stacks of business cards, threw themselves into the spirit of things.

The idea underlying the speed networking is that we all benefit from knowing other people in the profession, and having people we can connect with. For some, the biggest value from the conference lies in the opportunity to make new connections, and there were certainly plenty of those being made in spite of the early hour.

Later in the day came the academic-practitioner bazaar: a presentation from Kees van Haperen of a successful academic/practitioner collaboration on a consultancy project, followed by a series of 60-second presentations from academics

and practitioners on current projects which may benefit from collaboration, and subsequent discussions round their posters. The projects ranged across topical issues including behavioural O.R., strategy and analytics, pro bono O.R., performance measurement and urban growth. This was an opportunity to find out about what other people are doing, and to exploit the OR Society's ability to bridge the academic-practitioner divide.

More participative action came in the afternoon, with two sessions and a choice of six workshops in each. Agent-based modelling, the practicalities of O.R. project management, robust optimisation under uncertainty, data analytics, deciding whether to move from

O.R. into the business, a discussion on the relationship between data science and O.R., getting to grips with machine-learning with R, field notes from soft O.R. and problem-structuring – the only difficult thing was choosing which to go to. A number of the workshop leads are anticipating using the content of the discussions to write papers for future *Inside O.R.* articles, so watch this space.

The day was rounded off by a drinks reception sponsored by Prospect Recruitment, giving the workshop facilitators a chance finally to unwind, and everybody else the chance to carry on the conversations and follow up the acquaintances from a full and inspiring day.

We hope to get some of the input and output from the workshops, and the posters, onto the OR Society document repository in the next few weeks. In the meantime, many thanks to all those who contributed to make the day a success through putting together the posters, running workshops and participating in the many opportunities to discuss and collaborate.

<OR>

RUMINATIONS ON AN UNLUCKY SPIDER

PROF DAVID C LANE, HENLEY BUSINESS SCHOOL

Sunday breakfast. Sitting at my kitchen table the sun is quite strong but the window blinds can be set at horizontal to prevent direct sunlight and still give a clear view of the garden. I can see that it has rained overnight. I return to my muesli.

Glancing up I see a blotch on the top of one of the slats. I chew. The honey is an excellent touch but I cannot stop myself looking again. There is another blotch on the bottom of the next slat up. I put my spoon down and investigate.

A spider, pulped. Not recent but not very old. Crushed between the slats of the blind. Breakfast forgotten, I clean the two surfaces … and ruminate on how the spider managed to get crushed.

The blinds are let down at night and pulled up for the day. The timing varies with the seasons but quite when the blinds are pulled up or let down and whether the slat angle is adjusted slightly is irrelevant. The spider was killed when that blind was pulled up. That act takes … five seconds? Which means that in a 24 hour day that spider was in precisely the wrong place at precisely the wrong time. Unlucky. How unlucky? Well, five seconds in 24 hours indicates a probability of 0.000058, or around one in 17,000. That was one very unlucky spider. This is astonishing.

Or is it? After all, I have not seen this before. The spider has cheated death all year. What is the chance of there being such a death in a year? It is surely $1 - (1-p)^{365}$. You get 0.021, around one in 50. A bit unlucky but not amazingly so.

Those blinds have been up for 16 years and I have never seen this. The spider (or its kin) has survived all this time. What is the chance of there being such a death in that period? It is $1 - (1-p)^{365*16}$. At 0.29 this is worse than Russian Roulette. Tragic but my kitchen is a dangerous place apparently.

There are four blinds. Of different lengths! Well, that five seconds average is probably okay. That would mean $1 - (1-p)^{365*16*4}$. Good grief, that is a 0.74 chance of getting compressed out of existence. This is no case of bad spider Dharma, rather my kitchen is a death trap.

A quick assumption check. Make the pulling up time three seconds and that 16 year, four blinds in use chance of spider mashing is 0.56; toss a coin. Making the pulling up time ten seconds and you get 0.93; do not take that bet. So even across that range this is not a low probability event at all.

Conclusion: I have not interrupted breakfast after an astonishing event but after the prosaic operation of mechanisms of natural selection. No mystery then, nothing astonishing.

Strangely comforted, I sit down and lift my spoon.

Or is there more to it? How many spiders are there? For what proportion of the year are they active? Is that discrete approximation of a Poisson process alright for p? Should I start observing the blinds and use a maximum likelihood approach? Then the fundamental doubt: I have answered the wrong question. The probabilities I calculated are about whether I should be surprised. I have committed error of Type Zero, solving the wrong problem. What I should be calculating is whether that one spider has got cause for a formal complaint against Dame Fortune herself.

Must think further. After breakfast.

<OR>

RUN AND RUN AGAIN: A LEARNING POINT

LOUISE MAYNARD-ATEM

This month I'll be resuming the 'My First Project' series with a piece from Sue Merchant, a former president of the O.R. Society, and her early experiences in the Metropolitan Police. It is a fascinating insight into the use of O.R. on a large scale project and highlights both the technical and practical challenges O.R. practitioners had to overcome due to the lack of computer hardware and software.

Before I hand over to Sue though, I'd like to raise and issue that was brought to my attention regarding last month's Problem Solved article, and thank you to Dr Neil Parkinson at NHS England for being amongst the first to point this out to me. The solution I presented for the 'Relief Mission' challenge listed the optimum drop points as being **C3 and H7**; a number of you sent in this answer and it was the one that I arrived at myself. I think we probably all used Excel's solver tool too quickly and simply arrive at this conclusion, and if you take the first answer solver gives, you will have arrived at this answer. However, as Neil pointed out, if you re-run the tool you will find that **C4 and H7** actually gives you the optimum solution. Unwittingly, I've provided you all (and myself) with a handy cautionary tale; if you're running an optimisation problem and using software with in-built solver tools, make sure that you run them multiple times so that you improve your chances of achieving the best possible solution for the problem you're dealing with.

My First Project – Sue Merchant gets her fiches to fly!

I discovered early on in my career that O.R. people frequently get called upon to undertake a range of interesting tasks which the O.R. community at large would not deign to designate 'O.R.'. This is because O.R. practitioners, by and large, are selected not necessarily for their deep knowledge of O.R. techniques but for having a modicum of intelligence, for being reasonably literate and numerate, having an ability to communicate well with a range of people from senior managers to non-technical people and to 'think on their feet', and for being flexible. During my career in the MoD and Met Police I was asked to undertake a range of roles which put these skills to the test, including for example: sitting on a working party examining 'upkeep by exchange' methods for ships (me being the statistical expert – at least I knew what a statistical distribution was!)- I also learned a lot about nice pubs in the Bath area during this time; being the Met's lead in a mixed team of consultants and Met staff to devise the Met's first Information Strategy; completely re-engineering the system for handling criminal record files in the national collection – me being the technical person in a mixed team of four. It is this latter project that I thought might be of mild interest to newcomers to the profession. If not, read no further!

The background to the project was that on arrival in the Met in 1975 my first project was to do a 'Systems Study of the Criminal Records Office (CRO)' with a view to advising some committee or other on how to improve the system which was creaking under the strain. After mapping the entire system (which stored some 4.5 million files) and crawling around the floor of my open plan office (with the coppers in the office killing themselves laughing) trying to find a way to stick my hand-drawn systems analysis style diagrams into my report like a concertina so the whole picture could be viewed easily, I found I knew quite a lot about the records system and its problems. I recall recommending that the records should be computerised but noting that this was simply not possible at the time as many records were held in thick foolscap (i.e. oversized A4) folders with masses of handwritten detail on and a rough calculation of bytes needed showed that this wasn't feasible at the time. I used the notation 10^{12} (not sure of the exact figure after all these years) in my report to indicate the number of bytes needed and the only comment the director of our department made on the report was that I should write this out in full with all of the zeros!

A year or so later, the records office problems came to a head as the floor of New Scotland Yard was collapsing under the weight of the files (some criminal files had been microfilmed and then sadly printed out (single sided) on to paper again as their subjects, thought to be past criminal activity, had disobligingly gotten caught again). In addition files were getting tatty and were often mislaid to the extent that the system was pretty dysfunctional. A committee was set up (of course!) and they decided that the whole collection could not be moved to a different part of London because it would take too long to find and contract for a suitable building, and to move the collection and the staff, so microfiche was thought to be the solution. (Microfiche is microfilm which is cut up and inserted in strips into little wallets and it has the advantage of being updatable unlike microfilm in reels.)

A project team was set up comprising a Detective Chief Superintendent (who knew about criminals and how records were used), a microfilm expert from CRO, an officer from CRO who had a good overview of the whole system, a member of the civil staff who knew how the 500 staff ticked, and me as a sort of glue to keep it all together. We were given an office at New Scotland Yard which was really about big enough for 2 people so we had to learn to be tidy! The DCS wanted to call the project Criminal Records Utilising

Microfiche Evaluation Team as this incorporated his surname, but after a fair amount of banter I persuaded them that this was not an especially good idea and we settled on CROMP (Criminal records on Microfiche Project). We were given six months to work out whether microfiche would work:

1. How would it be sent out to officers?

2. How would they read it?

3. What format should it be in so it would be easily updatable and understood by the officers who requested copies?

4. What type of fiche should be used and would it be suitable for long term storage? We looked at some updatable fiche but there was no guarantee that the record would still be readable in say 10 years' time.

And if the fiche route looked promising:

1. How would the system be re-engineered to cope with the myriad of different things that had to be done with the files (e.g. a criminal with a particular crime pattern needed to be noted in a method index; foreigners' arrest info needed to be dealt with by a 'foreign' section) on their passage round the office (this was incidentally done by a conveyor belt which went round all the sections of the office)?

2. Would staff and officers cope with reading microfiche instead of files?

3. How long would back record conversion take?

4. How would the fiche be stored?

5. How many filing cabinets and staff would be needed?

6. How much space would be required?

7. How could potential misfiling be reduced?

8. Would a back up collection be needed (the answer was 'yes' and we had to get Westminster Council's agreement to release ammonia into the atmosphere as this was part of the diazo copying process)?

9. How much training of officers/staff would be needed for running and using the system?

Despite a lack of readily available data, I did manage to do a few sums on these tasks including: forecasting the number of first time arrests (to create new files) and recidivist arrests (to see how many updates would be needed); using MCDA to select the microfiche viewers; costing everything; and producing a critical path analysis of what we needed to do by when to complete in six months. My main role was to keep an eye on the latter and write all the papers for the steering committee at the right time so that timely decisions could be taken, enabling us to move on to the next stage.

So what happened? The steering committee approved our recommendations and implementation commenced soon after the end of the six months. The completed system worked (at least as well as it might have reasonably be expected to) though there were of course many screams from officers who obviously preferred paper. Eventually, when technology could cope with such large volumes of data, the collection (or most of it – back record conversion worked both backwards and forwards in year of origin date) was digitised. The microfiche library was still being used as back up some 30 years later.

We had a very busy and exciting time but hardly had time to eat and I lost half a stone over the six months! This was despite the DCS's efforts to reward us for our efforts periodically with eel pie and mash at a place he knew in the East End, and trips to various local hostelries to calm our nerves!

Feedback from the top level committee which commissioned the project, chaired by the Chief Constable of Avon and Somerset, was that the report 'exceeded his wildest expectations', which was a very great relief to us all.

<OR>

DATA LAKES

NIGEL CUMMINGS

'Data Lakes' also known as 'bit buckets' and 'landing zones' are really little more than very large data storage areas that are often used with cheap open source Hadoop software.

> 'The Data Lake concept is increasingly being used by airlines and utilities companies'

Data Lakes can store any number of collections of information in 'raw' formats. Storing data in this way gives speed and economy advantages too – GE for example recently released a statement which indicated their adoption of Data Lake technologies has resulted in the ability for it to process information 2,000 faster and ten times cheaper than traditional methods although it is, as yet, still in the early stages of adopting this technology.

Cap Gemini has, for example, taken to providing Data Lake services, its views on Data Lake technologies were recently summarised by the company, as a new business approach to enterprise reporting and information management that:

- Delivers corporate performance indicators while satisfying local information needs

- 'Stores everything on one interface

- Provides key insights from data where and when it is needed

- Provides, timely, flexible and high-integrity data insights that result in responsive, fast and targeted business decisions

- Reduces IT investment costs and change lead times

- A global view of business that will enhance or even replace traditional data warehousing

- As a next-generation information management solution that delivers Big Data to all users Hadoop Data Lakes will probably become the most popular enterprise applications in use over the next few years, because much of the appeal of Hadoop is its ability to support use at massive scales. In terms of both number of users and processes and size of datasets, Data Lakes can store the massive data sets needed by Hadoop enabled software.

Data Lakes are important in the world of advanced analytics and for users of Hadoop because they are places in which we can store practically unlimited amounts of data of any format, structure and type – and they are cheap and massively scalable.

Hadoop data processing software is well suited to Data Lakes – it was designed to be run on inexpensive servers – such software is cheap to buy and operate and is supported by many companies. Hadoop has also proven superior to traditional database management systems (DBMS), because it copes well with data of any type. Currently DBMS's require that the data managed by the system all fit into a common metamodel.

Data Lakes in conjunction with Hadoop tools should enable companies to make much better use of all of the data they have accumulated, not just dedicated sets. The Data Lake concept is increasingly being used by airlines and utilities companies – other sectors will no doubt follow.

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: : ANALYTICS : : : : : : :

ANALYTICS REVOLUTION REQUIRED

NIGEL CUMMINGS

Faced with the 'Internet of things', there may be a need to take a new look at how we structure analytics procedures.
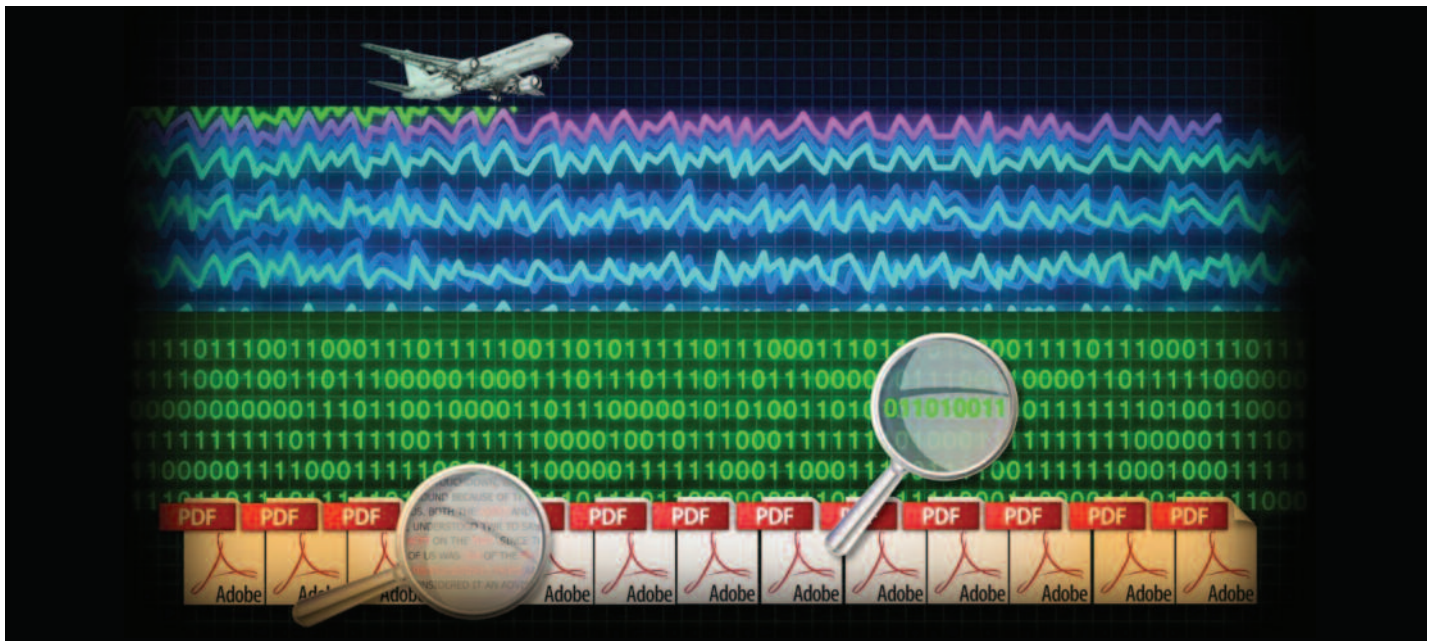
The Internet of Things (IoT) it is claimed, will revolutionise operations and analysis because it will increase efficiencies by combining smart sensors, cameras dedicated software, and business intelligence (BI) with the Internet in the form of private clouds in many and diverse ways.

Already IoT is becoming evident in our environment; people routinely wear badges that allow them to enter secure locations where their health and movements can be monitored. Factories and warehousing operations too are using an increasing numbers of sensors in remote monitoring systems to provide early indicators on potential hazards such as chemical spills, intruders, power outages or even broken water mains.

As sensor data streaming analysis develops, even the smartphone we carry in our pocket will interact with the IoT making navigation more efficient by detecting traffic congestion before we are aware of it (Google to a certain extent already provides logistic analysis and alternative routing suggestions as one of it user services).

Supply chain management will be made more efficient too, by the proliferation of sensors on pallets cases and individual products – not just for security but also to allow automatic location and selection.

IoT is already providing a vision of a more efficient supply chain environment, indeed there is a new division of supply chain management and manufacturing known to the industry as Industrie

4.0. This new division works from the bottom up whereby applications direct people or even automatons to where they need to be and the processes they need to undergo or undertake – this will be common place. Personally I don't want to be an early adopter of such technologies as I recently experienced direction from a Satellite Navigation system which urged me to park in the River Severn!

IIoT - 'Industrial Internet of Things is said to be the next innovation for enhancing business intelligence (BI). (This will, no doubt, be superseded by IDIoT, in due course.)

BI has traditionally focussed on the analysis of historical data but IIoT will concentrate more on the analysis of data as soon as it is captured. Complex event processing engines will become the norm for analysing multiple data streams in real time for generating alerts, alarms and actions.

To accommodate IIoT though, there is likely to be a 'rethinking' of data storage practices and the way we analyse data, the majority of IoT and IIoT data will only have 'fleeting value', there will be no need to store it all, only small amounts will need to be archived. It will also need to become leaner and far more efficient.

The good news is that this will, almost certainly, lead to more jobs for skilled data professionals and analytics experts.

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PRICING ANALYTICS: WHAT CAN RETAILERS LEARN FROM AIRLINES?

NIGEL CUMMINGS

Arne K. Strauss, Associate Professor of Operational Research, Warwick Business School lent his considerable academic experiences to the presentation of an interesting paper at our most recent 'Developments in Advanced Analytics' event.

Arne K. Strauss

The subject of Arne K. Strauss's presentation concerned revenue maximisation through the use of advanced analytics drawing largely on work he had done for various organisations and from his own experience of the field in general.

He began by stating that retailers today are adopting dynamic pricing strategies. Specifically he said that the Kingfisher Group, one of Europe's largest retail companies had already started to use electronic price tags which enabled them to receive instant feedback directly from their checkouts in their stores as to the products and times of purchase.

He then gave another example of how electronic price tags could be applied in the food industry, products there, were time sensitive regarding their sell by dates and items close to their sell by dates could automatically be reduced in price to incentivise customers to purchase them and thus avoid the need to remove them from shelves and dispose of them by staff – electronic price tagging in this instance also reduced the amount of time needed for staff to travel around stores attaching new 'reduced' price tags as the adjusted pricings could automatically appear at point of selection and sale.

His presentation illustrated how combinatorial optimisation techniques could be applied to help make decisions about the items that were offered - when, to whom and at which price? Zara, for example, has developed a forecasting and price optimisation model motivated by dynamic pricing research. In controlled field experiments in Belgium and Ireland clearance revenues showed a 6% increase over previous manual markdown practice. In fact it had been so successful that Zara had implemented the modelling world-wide.

Arne Strauss also spoke about personalisation and how the application of it could increase sales for retail. Citing airlines as an example he said that. 'Passengers who feel understood and valued at a personal level are more likely to be receptive to up-selling and cross-selling'.

He also spoke about how advanced analytics could be applied in managing home deliveries for online grocers. Currently the UK is the clear leader in the online grocery market with around 22% of individuals using this. (Next best is Denmark, 12%; Ireland, 5%, Italy and Greece only 1%). Such a high figure was ripe for retail optimisation. Prof Strauss quoted Ocado's CEO Tim Steiner on the growth of home delivery, who he said, expected ultimately 40-60% of grocery sales to be online.

Studies revealed that to maintain strong growth in attended home deliveries, barriers to the online customer had to be reduced. Delivery costs need to be removed. Additionally, 30 minute delivery slots could also help quoting from a report which appeared in Forbes magazine on 16th of April 2014, which detailed the so-called 'same day delivery wars' between Google, Amazon and Walmart.

In conclusion he thought that sharing ideas between different sectors could stimulate development of better decision support in retail. He also felt that future developments could focus on context dependent personalised experiences and that there was potential for collaboration between industries and academia too.

Arne K. Strauss was awarded the OR Society prize for the best doctoral dissertation in 2009 and the Goodeve Medal for the best paper in JORS in 2012 - the latter for collaborative work with Lufthansa Systems on network revenue maximisation. He is currently applying similar techniques in collaboration with a major e-retailer where significant benefits are being achieved.

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NEW OPPORTUNITY FOR ACADEMIC RESEARCHERS TO CREATE 'BETTER KNOWLEDGE FOR A BETTER SOCIETY'

JUDITH KNIGHT, ADMINISTRATIVE DATA SERVICE

Administrative data collected and held by public bodies over decades contain a vast rich source of accurate longitudinal records which have, to date, been mostly unavailable to researchers.

Administrative Data Research Network

The new Administrative Data Research Network (ADRN) (with an anticipated launch in the autumn of 2014) has been created to offer researchers access to de-identified linked administrative data.

The Network will negotiate access to government data that may well have never left the department before. Crucially, the data will be de-identified, a process that removes directly identifying details such as names and addresses.

Enabling linkage between these datasets will unlock an enormous capacity for research to be conducted that produces results with the power t; inform policy making; provide the knowledge for economic and social gain or demonstrate validity to establish new initiatives.

The Network is funded by the Economic and Social Research Council and is part of the Government Big Data Network initiative to harness the power of data held by the public sector.

WHO IS IN THE NETWORK? The Network consists of the Administrative Data Service (ADS), the entry point for researchers and four Administrative Data Research Centres representing and located in each of the UK devolved regions. Each centre, formed by a collaboration of universities and the region's national statistics agency, provide secure on-site facilities, expertise and support to both researchers and the data providers. The Network is governed by an independent board and chaired by the UK Statistics Authority.

WHO CAN APPLY? Researchers affiliated to academic institutions, government departments and independent research organisations throughout the UK will soon be able to approach the ADRN with a research proposal requesting access to data held by different government departments.

HOW DOES THE PROCESS WORK?
- The ADRN will support researchers in developing their proposal which is subsequently sent to an approvals panel compiled of independent experts together with lay members who will represent the public interest. The Approvals Panel will consider the projects; feasibility; potential privacy impact; ethical considerations; potential for public benefit and scientific merit.

- Researchers will need to become accredited to demonstrate their suitability and prove that they have the skills necessary to understand and analyse the data. Accreditation will require each researcher to undergo training in order to use the data lawfully, safely and securely before any findings are released.

- In order to link the data whilst protecting the information of individuals, the direct identifiers and the data will be kept separate at all times. With the help of a 'Trusted Third Party' the ADRN can link data from different government departments in a lawful, safe and secure way.

- This process creates the ability for the researcher to analyse information spanning a number of independently collected datasets: tying the information from each dataset to an individual without ever knowing who they are.

- Once the researcher has been accredited, the proposal has been approved and the data has been linked and de-identified the researcher may be granted access to the data in a controlled environment.

- When the data has been analysed and the researcher has concluded their findings, rigorous statistical disclosure control methods will be applied before the research can be released from the secure environment.

HOW ARE THE RESULTS USED?

- Findings will be made available in order to capitalise on the research's potential to influence policy making and legislation

- The Network website will feature a summary of the research to demonstrate the potential benefits that accessing administrative data can have

WHEN CAN APPLICATIONS BE MADE? The service will be opening its doors to research proposals from this autumn. For more details visit www.adrn.ac.uk or email any questions to help@adrn.ac.uk

<OR>

REGIONAL SOCIETIES

EAST MIDLANDS (EMORG)

CONTACT: Chris Smith
TEL: 01530 416426
EMAIL: chrissmith677@gmail.com

EMORG - Working in Consultancy
Date/Time: Wednesday, 29 October 2014 at 17.45 – 20.00
Venue: Sir Richard Morris building (School of Business & Economics), University of Loughborough
Speaker: GfK Market Access Team

The market access team within GfK will be giving a brief presentation on market access consultancy in the Pharmaceutical and Medical Device Industries and outlining the career opportunities that this offers. Following the presentation refreshments will be provided and the team will be available to discuss any specific questions you may have.

Market Access Consultancy is very much like Operational Research (O.R.) – in that it involves applying appropriate analytical methods to help those who run organisations (or develop and sell products) make better decisions. It's a 'real world' discipline with a focus on understanding and identifying how to improve the complex systems and processes that underpin commercial success - Like O.R. it is the 'science of better'.

GfK has over 750 staff in more than 40 dedicated healthcare business units around the world with 70 expert market access consultants across Europe and the US providing clients from the pharmaceutical, medical device and diagnostics sectors with a broad range of pricing, reimbursement, market access and health economic support. The European market access team is based across two offices in the UK (Melton Mowbray, Leicestershire and London) and one office in Germany.

We are constantly looking for talented individuals with strong analytical capabilities to join our team, from people with no direct experience and an enthusiasm to learn (analyst level) up to experienced market access individuals with industry, consultancy or healthcare experience (consultant level and above).

The key areas of work include:

• Pricing assessment and strategy
• Payer research
• Key Opinion Leader (KOL), physician and patient research
• Health economic assessment and economic modelling
• Reimbursement negotiation strategy
• Core value dossiers and Health Technology Assessment (HTA) submission support
• Development and testing of value propositions and messaging
• Product lifecycle and portfolio strategy
• Pricing, reimbursement and market access due diligence.

The GfK team, along with EMORG, look forward to welcoming you to this event.

If you would like any further information please contact Chris Teale who is both Chairman of EMORG and Vice President of GfK.

Telephone: +44 (0) 1664 503712   Mobile: +44 (0) 780 506 3647 E-mail: Chris.Teale@gfk.com

EMORG - Energy system modelling in an uncertain world
Date/Time: Thursday, 13 November 2014 at 17.30-19.30
Venue: Sir Richard Morris building (School of Business and Economics), Loughborough University
Speaker: Chris Heaton, Energy Technologies Institute

This talk will describe how energy system modelling can be used to understand the role of different technologies in the future UK energy system. In areas such as renewable electricity, big power plants, how we heat our homes and the types of cars we drive, the UK energy system will undergo significant changes in coming decades driven by a combination of economics, climate change targets and renewal of old infrastructure. A key feature of the problem is uncertainty – uncertainty in the cost and performance of technologies in the future, uncertainty in international fuel prices and uncertainty in the political context for national infrastructure. This talk will describe the modelling work done by the Energy Technologies Institute (ETI), and what it tells us about how we can prepare for effective transition.

Refreshments will be served from 5:30pm, with the talk starting and 6pm.

If you have any questions or would would like more information please contact Nigel Monk, Centre for Renewable Energy Systems Technology, Email: n.a.monk@lboro.ac.uk

MIDLAND (MORS)

CONTACT: Jen East (Secretary)
EMAIL: MidlandsORSociety@live.co.uk

The ooh – ahh of simulation
Date/Time: Tuesday, 21 October 2014 at 18.00 - 20.00
Venue: TBA
Speakers: Frances Sneddon, CTO Simul8

How do you solve a problem like Analytics?
Date/Time: Wednesday, 12 November 2014 at 18.00 - 19.00
Venue: TBA
Speakers: Prof. Stewart Robinson, President of the Operational Research Society

Abstract: 'Analytics' seems to be everywhere, job adverts abound, companies talk of their analytics capabilities, and the press regularly report on activities in analytics. Meanwhile, in the O.R. world, our US counterpart, INFORMS, have thrown huge resources at analytics. So how should we, as UK based O.R. practitioners and academics, respond? In this talk I shall reflect upon my own

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analytics journey which started in around 2006. We shall ask what is analytics? Is it just another fad or something that will stay? And we shall finish by thinking about what this means for us. Come ready to discuss your own ideas on how we 'solve a problem like analytics.'

STEWART ROBINSON is Professor of Management Science and Associate Dean Research at Loughborough University, School of Business and Economics. Previously employed in simulation consultancy, he supported the use of simulation in companies throughout Europe and the rest of the world. He is author/co-author of five books on simulation. His research focuses on the practice of simulation model development and use. Key areas of interest are conceptual modelling, model validation, output analysis and alternative simulation methods (discrete-event, system dynamics and agent based). Professor Robinson is co-founder of the Journal of Simulation and President of the Operational Research Society. He is helping to lead an OR Society Charitable Project on Analytics Education. Home page: www.stewartrobinson.co.uk.

Non-members welcome, no charge is made. After the talk, you are welcome to join us and the speaker for a meal. For further information please contact MidlandsORSociety@live.co.uk

The use of O.R. in designing new supply chain network in Marks and Spencer
Date/Time: Thursday, 27 November 2014 at 18.00-20.00
Venue: TBA
Speakers: Victoria Forman, Marks and Spencers

Details to follow

SOUTH WALES (SWORDS)
CONTACT: Dr Jonathan Thompson.
TEL: 029 2087 5524 Fax: 029 2087 4199
EMAIL: ThompsonJMI@cardiff.ac.uk
Postgraduate Presentations and Social Event
Date/Time: Tuesday 7 October 2014 at 17:30
Speaker: Various Postgraduate Students
Venue: School of Maths, Cardiff University

Following on from a similar event last year, a number of PhD students will give brief overviews of their research in Operational Research areas. These will cover a range of topics including health, scheduling and routing problems and are based on their ongoing postgraduate research. There will also be an opportunity to meet new students on the MSc in Applied Statistics and Operational Research run by the Cardiff Mathematics Department.

The meeting will be held at the Mathematics Institute, Cardiff University. Tea and coffee will be available from 5.30pm in the Internet Café which is just inside the main entrance to the Mathematics Institute. The talks will commence at 5.45pm in room M/0.40 (ground floor).

The talks will last approximately one hour after which we will go to a nearby hostelry (venue to be decided) — for networking and free refreshments (meal and drink).

As we need to book the food beforehand, please let me know by the 1st of October if you plan to attend. Also please let me know if you are a vegetarian or have other dietary requirements.

Dr Jonathan Thompson, Thompsonjm1@cardiff.ac.uk

SWORDS Title To be Confirmed
Date/Time: Wednesday, 12 November 2014 @17.45 - 19.00
Speaker: Naomi Rowlands (BA)
Venue: School of Maths, Cardiff University

Naomi Rowlands from British Airways will be speaking to SWORDS on the 12th of November. Further details will be provided later.

SWORDS Seminar and Quiz
Date/Time: Wednesday, 10 December 2014 @ 18.00
Speaker: Professor Steve Disney
Venue: School of Maths, Cardiff University

Professor Steve Disney will be giving a presentation to SWORDS on the 19th of December and this will be followed by a quiz and food. More details will follow later.

<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'

OR-30

October, 1984

John Crocker

In May 1984, the English member banks of Euro-Banking hosted the 1984 meeting at which 70 representatives of banks from 16 European countries met under the chairmanship of Peter Cloot, Head of Business Research at Barclays Bank. The Rt Hon. Kenneth Baker M.P., Minister of State for Industry and Information Technology talked about information handling not just for banks but also in the wider context on society and industry in general. He predicted that personal computers would go beyond home banking to home shopping and that there would be a major transfer of commercial information from paper to electronics. He also foresaw that this would lead to an increase in jobs, albeit of a different nature. He reminded delegates that they were technological leaders and that they needed to invest much of their efforts in encouraging acceptance of both new equipment and new methods. Alas Robert Park does not give any indication as to how the delegates reacted.

Humphrey Norrington, General Manager, Barclays Bank PLC gave the opening plenary address in which he raised two questions: 'What are the key issues which currently face bankers?' and; '… how do bankers use operational research?'. In answering the first of these questions, he naturally raised a whole load of other questions which included: 'Will smart cards cross the channel to England?'; 'Will the future of personal banking services be based around plastic cards and centralized systems?' and; 'Will home banking really take off, and how quickly? Can we operate such a system profitably?'.

In response to his second question, Mr Norrington explained that he regarded it more as 'Business Research' (rather than Operational Research). He said that the group in Barclays had developed one- and five-year financial planning models, also models concerned with the effects of both personal and non-personal tariffs on our commission earnings and in manpower planning. O.R. was also used in the execution of surveys and the use of statistics to enable the analysis of profitability by customer and by product. One example was in the assessing of the benefits, or otherwise, of 'personal bankers'.

One of the main advantages of the group was that they had the luxury of being able to stop and think. An interesting example of this was when the group refused to use formal O.R. techniques to assess the impact of reintroducing the opening of branches on Saturday mornings (something Barclays had done in 1983, after a break of 15 years). The problem was that the bank had selected the 400 branches with the best prospects so there was no control group (for comparison) and there was no way of determining cause and effect, e.g. a customer may open an account on a Monday morning because he can visit the branch on a Saturday.

Finally, he set four challenges for ALL operational research practitioners:

1. Do you have the courage to use the simplest techniques possible and avoid any temptation to blind your clients with science?

2. Do you have the pragmatism to tackle the key issues rather than the ones which you might find academically satisfying?

3. Are you prepared to collaborate with other disciplines?

4. Are you prepared to share the credit for your successes? ('You can achieve a great deal, provided you do not mind who gets the credit.'

Norrington, H.T., (1984), A Banker's View of Operational Research, *JORS* **35.**10, pp 877-883 (jors1984178a.pdf)

Park, Robert, (1984), EURO-Banking 1984, *JORS* **35.**10, pp 875 (jors1984177a.pdf)

<OR>

OR-20

O.R. fails again … or does it?

Ramblers' ramblings

There we were, almost 9000 feet up in the Italian Alps. It was one those all too rare, outstandingly clear days when it almost seems you can see for ever. A hundred miles away across two frontiers we could make out the unmistakable shape of Mont Blanc, whist on another horizon the jagged, snow-capped peaks of the Bernina stood white against the deep blue sky. It was sublime moment, but it was soon to turn ridiculous.

It would be impossible to say what led to the bizarre events that followed. Perhaps the thin mountain air was to blame? At any rate, it all started when one chap – the one with 30:20 vision and a fondness for Marascino brandy – spotted Blackpool Tower in the distance. Then things went from bad to worse when, cutting right through the thread of the conversation, somebody asked,

'If we're all sitting here not thinking about our homes, do the cease to exist?'

You'll be pleased to learn that O.R.'s ambassador in the party was

: : LAST WORDS : : : : : :

quick to seize the opportunity to demonstrate the merits of our subject. The O.R. method should be applied to this problem, he insisted.

Problem definition was soon dispatched. The objective was to confirm or refute the hypothesis that one's house ceased to exist when one wasn't thinking about it.

Swiftly, then on to data collection. The evidence for and against the hypothesis stacked up like this.

FOR: Out of 20 or so people present, not one had been burgled while on holiday. Given that crime is one of the few fields in which Britain can claim anything approaching world leadership these days, that seemed pretty strong, if circumstantial evidence in favour.

AGAINST: Nobody had experienced any remission of mortgage payments while on holiday, and since no building society would ever grant a loan against a non-existent property, this proved a telling point against the hypothesis.

But then it was pointed out that regardless of whether we were thinking of home, the building society might well be doing so. In fact, they probably employed staff specially to think full time about people's houses, in order to keep their mortgages alive and earning.

On the other hand, if nobody thinks about the building society (and who ever does?), thus causing it to dematerialise, is it possible for a non-existent building society to employ anybody to think about anything?

At this point there were protests from some of the party that they hadn't come on holiday to perform brain-damaging mental gymnastics such as these. Sadly, these protests led to the view that the O.R. method should be abandoned in favour of a 'practical' approach. The hypothesis was accordingly put to the vote and was heavily defeated.

It seemed for a while that O.R. had failed. However, as we descended it became clear that the solution produced by the 'practical' approach actually commanded no confidence whatever. On the contrary, it was unanimously decided that, just in case, we would all start thinking about ice cream long before we got to the village at the bottom.

Would it have been different if O.R. had prevailed? Probably not. After all, who in the world would risk missing out on an Italian ice cream?

<OR>

PROSPECT
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PREDICTIVE MODELLING OPPORTUNITIES
To c£45,000 + Low Tax & Other Benefits

Our client is a Gibraltar based on-line leader in its field, committed to success through advanced analytics. As part of their new strategy, they seek MSc calibre individuals offering experience of applying quantitative & predictive modelling skills in a high-impact, complex and data-rich environment, including the use of tools such as R, SAS, MATLAB or SQL. Being based in Gibraltar, with occasional business trips to London, there is the added advantage of a Mediterranean lifestyle in one of the recognised areas of cultural and scenic interest.   **Gibraltar**

FRAUD/RISK ANALYTICS CONSULTANCY
£40,000 - £110,000 + Benefits

This global management consultancy has significant growth plans for their UK Analytics practice, prompting recruitment at Consultant, Manager and Senior Manager levels. Providing expertise in predictive modelling and associated analytics in the Fraud and Risk domains, they seek candidates offering relevant experience {ideally using regression analysis and SAS or R}, genuine business awareness and excellent communication skills, underpinned by impressive academic credentials.
London based

PhD or Msc GRADUATES - DATA SCIENTIST
c£40,000 Package

As part of building a world class analytics team, this market leader seeks a talented achiever able to combine impressive academic credentials with proven data science experience and an aptitude for activities such as optimisation, forecasting, pricing analytics and revenue management. Specific experience of advanced statistical activities (Bayesian analysis), Data Visualisation (Tableau) and Matlab, R, SQL, SAS or C++, would be highly advantageous.   **London, West End**

IN-HOUSE FINANCIAL CONSULTANCY
c£45,000 - c£75,000

Our client is a £1 billion turnover UK subsidiary of an extensive global group. Following internal promotion, an enviable opportunity has arisen for an experienced financial modeller to take up a key role, reporting at Board level and responsible for activities such as: financial strategy input to tendering, provision of investment appraisal/project finance advice, financial option appraisal and sensitivity analysis. A numerate degree and substantial accounting knowledge are essential.
Central London

DATA ANALYTICS CONSULTANT
To £75,000 DOE + Bonus

The UK's leading provider of business process outsourcing and integrated professional support services seeks to recruit a 'Data Story Teller' for this high profile pre sales consultancy opportunity to work across several bid teams at once to identify and articulate how data analytics and insight forms part of their solution. You will have proven commercial experience of the delivery of Statistical and Analytics projects, combined with level of drive, energy and personal commitment to succeed.
Central London

BUSINESS MODELLING ANALYST
To £44,000 + Benefits

Our client is a leader in its field with an established history of applying Operational Research expertise to operational, tactical and strategic issues. As a consequence of significant project demands, there is an immediate need for an experienced Business Modelling Analyst to work within project teams to produce high level strategic models and analysis for internal clients to be used in making key strategic decisions having a wide ranging impact on the business, especially on costs, quality of service, staffing and carbon footprint.
Central London

> With over 30 years of specialist market knowledge, Prospect is uniquely positioned at the forefront of Operational Research and related areas.
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New opportunity to influence a business that has yet to see the benefits of analytical insights and really see the results of your analytical endeavours through to implementation stage in this fast paced, exciting Retail environment. Applications are welcomed from those with strong consumer / customer driven analytical insight backgrounds who are ready for their first step into management and are seeking an opportunity where they can see the results to their analytical expertise realised quickly in a fast moving business.   **Hertfordshire**

SENIOR CREDIT ANALYST – SAS
£Negotiable Package

Exciting opportunity to join a new specialist division within an established City name. The successful individual will be able to demonstrate the ability to provide meaningful insight through data analysis and data manipulation, solid SAS experience and a background in consumer credit data, including analytical assessment of lending viability. In return, you will be joining a small team in a cutting edge environment in a rapidly growing department where your findings will have tangible business strategy effect.   **SW London**

ASSOCIATE MANAGER
£47,000 - £58,000 + Bonus

This role has been created to focus on driving change and improved decision making through robust data analysis. Successful candidates will be able to offer a strategic perspective, good business judgement, deep analytical capabilities and a collaborative working style. Ideally educated to Masters degree level (or similar) in a numerical subject with strong technical ability, using SQL and Excel.
West London

ONLINE ANALYTICS
£45,000 - £50,000 + Bonus + Benefits

A new opening, within a large global brand, has been created to specifically address better insight of customer interaction and experience. Providing deep dive analysis from web and app usage data, your findings will be critical to key decision making. Ideally, you will be: comfortable with one of the biggest databases in the world; a proficient data miner (SQL) and possess well developed quantitative problem solving ability.
Surrey

RISK ANALYST
£35,000 - £45,000 + LW + Benefits

Possessing a strong honours degree in a numerate discipline, you will have proven ability to think around abstract concepts in a logical and quantitative manner. You will be assessing real life issues through mathematical modelling. Demonstrable experience of human risk and safety analysis is highly desirable, however of paramount importance is advanced Excel ability, proven modelling and data analysis skills and exceptional interpersonal communication expertise.
London EC1

SENIOR ANALYST
c£41,000 - c£55,000 + Benefits

This newly created team seek to resource an experienced Senior Analyst to develop a hub of advanced modelling and analytical expertise that can be used to run complex analysis and provide recommendations for key business decisions. The successful candidates should have significant experience of using advanced modelling techniques and recent experience of using statistical tools such as SPSS, SAS or R in addition to experience of using various tools to analyse large and complex data sets including Excel and Access.   **Warwick**

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

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