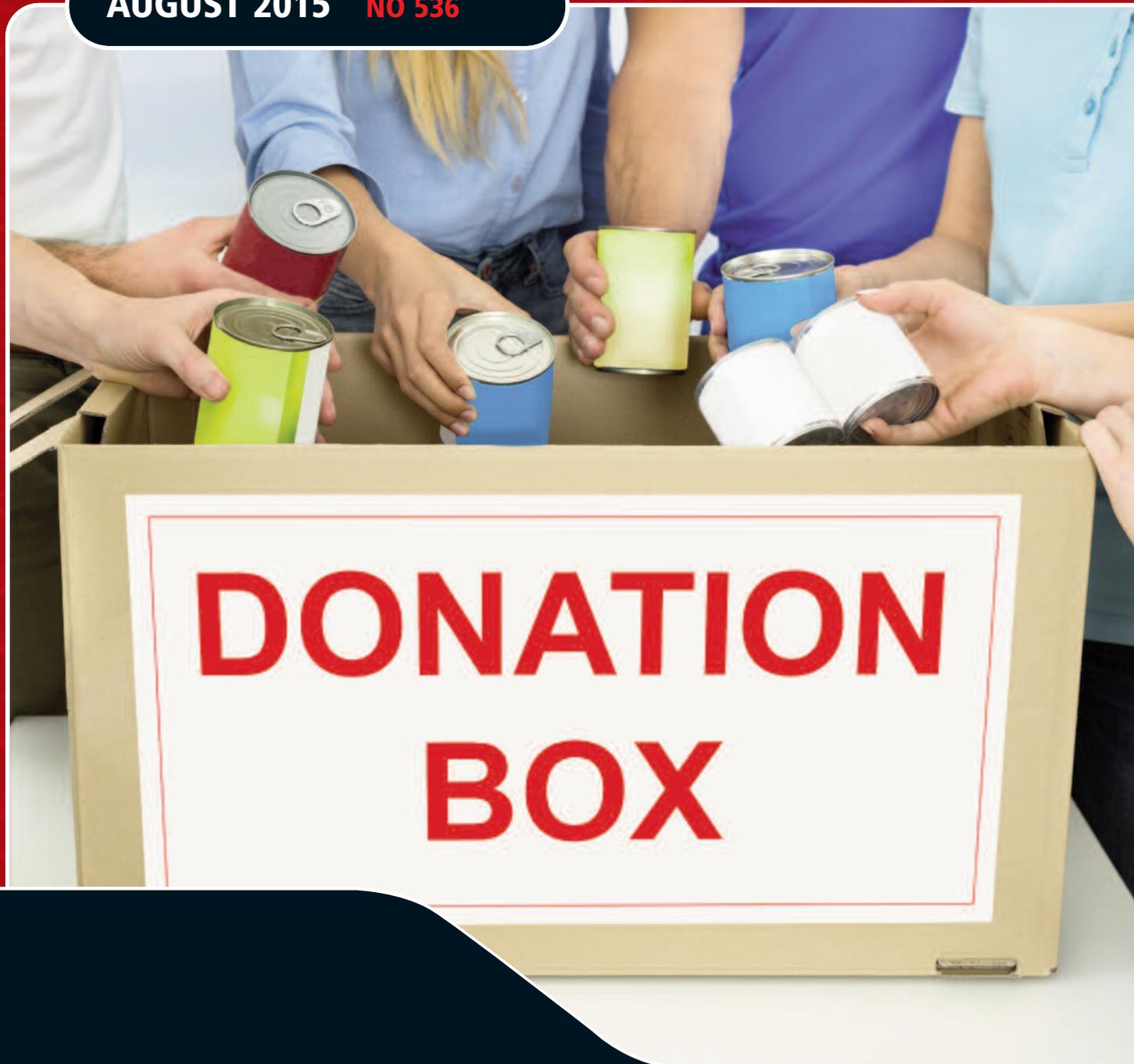


INSIDE O.R.

AUGUST 2015 NO 536



O.R. AND OXFAM

:: INSIDE THIS MONTH :: :: :: ::

THINKING AQUATICALLY

EURO2015-A VERY BRIEF OVERVIEW

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SETTING A BAD EXAMPLE



THE OR SOCIETY

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Dame Kathleen Ollerenshaw Charity

A £1.75m fund to support 'visionary and pioneering pure mathematics' at the University of Manchester will be funded from the Estate of Dame Kathleen Ollerenshaw.

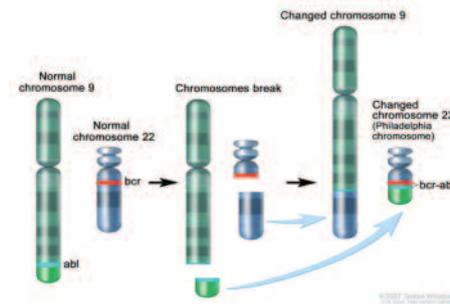


John Timpson, CBE, Trustee of the new Charity said of the endowment. 'Her driving force was the possibility of connecting the deep history in pure mathematics at Manchester (including Alan Turing's work) to the present and future'.

Dame Kathleen, who was born 100 days after Alan Turing, lectured in mathematics part-time at the University in the years following the WWII, published over 25 mathematical papers and was a former President of the Institute of Mathematics and its Applications. She was a former member of Court at the Victoria University of Manchester, and was Deputy President of UMIST for 10 years. She received an honorary degree from the combined University of Manchester at the age of 100. For more information: <http://bit.ly/1JsIVmY>

Big Data v Big C

In a collaborative project between The Hong Kong Polytechnic University (PolyU) and Harvard University, being led by Professor Benjamin Yung, big data analytics has identified potential diagnostic and therapeutic target genes in relation to Chronic Myelogenous Leukaemia (CML).



These discoveries help the future development of NPM1-oriented treatment strategy in CML and enable targeted therapy to be more targeted. The analysis platform can also be readily applied to other diseases.

More information at: <http://bit.ly/1Mkcl6p>

Wait for it

A study about to be published in INFORMS shows how improvements can be made by air traffic managers to cope with unexpected delays. A Ground Delay Program (GDP) is implemented in the likely event of bad weather. Rather than putting aircraft into a holding pattern, departures can be delayed until the destination airports can cope.



The study indicates it is good to know early how late a flight will be and comments that GDP decisions that recognise this are

superior to those that do not, substantially reducing the cost of GDPs to flight operators.

More information at: <http://bit.ly/1fy7Si4>

Help is at hand

A study published in the June 2015 issue of the Journal of Adolescent Health showed that sexual violence on campus has reached epidemic levels. Help is at hand though – if students download a 'virtual bodyguard' app called MrGabriel.



'Personal safety is absolutely essential to being able to fulfil one's potential as a human being,' said Virginie Gretz, the CEO of VProject, the company behind MrGabriel. Gretz, decided to build the app, based on her personal experience of dangerous situations.

A text message with your precise location will be sent simultaneously to all your predefined Angels if you tap your device, fail to respond or answer 'yes' when it thinks you may be in danger.

More information at: <http://www.mistergabriel.com/>

For better, for worse

A study released by psychologists at Washington State University claims that men exaggerate their ability at maths. More than 300 male and female volunteers were given maths tests and asked how they felt they did before receiving feedback and their results. The men tended to think they had done better than they really had.

This attitude could be why men are more likely than women to pursue careers in STEM (science, technology, engineering, and maths) professions. This could also be why



those professions end up being dominated by men which then perpetuates the myth than men are better than women at those subjects.

More at <http://bit.ly/1RJmNxq>

Boom or Bust



If a firm faces troubled times during a stable market, strong advertising can carry it through. But when the market is turbulent, a firm's Research and Development is more likely to help save it from bankruptcy. A new study published in the Articles in Advance section of Marketing Science, a journal of the Institute for Operations Research and the Management Sciences (INFORMS), shows that 'intangible assets' built with advertising (such as brands) and R&D (such as patents) can help protect firms from bankruptcy. The study also indicates that the effectiveness of each depends on the market climate.

More at <http://bit.ly/1gJXD15>

Everybody out

According to Sam Zell, the outspoken chairman of Equity Group International, 'The increasing use of Artificial Intelligence (AI) is a factor that could seriously impact the commercial markets, it is moving not slowly but exponentially.'



A study by Oxford University suggests 47% of today's jobs could become automated over the next 20 years.

For more: <http://theatlntc/1GlzXG6>

SAP is rising

At the launch of the latest version of SAP's predictive analytics software, Mark Darbyshire, SAP UK and Ireland's chief technologist predicted, 'Automated predictive analytics will become commonplace'.



The update will better support data scientists and enable them to extend their algorithms to a broader business population. It will cater for internet of things (IoT) applications, improved integration with Hana and enhanced integration with the open-source statistical analysis language R

More information at: <http://bit.ly/1fy854V>

Reviewing the reviews

As a result of deploying improved Machine Learning algorithms, the e-commerce giant's

new platform has begun altering its star ratings and review process. The new system will give more weight to newer reviews, reviews from verified Amazon purchasers and those that more customers vote as being 'helpful'. It will also attempt to eliminate 'fake' reviews.

More information at: <http://bit.ly/1HEvS2M>

Count us out



'Count Us In', a report by the British Academy published on Thursday 25th June, says there needs to be a dramatic improvement in the population's grasp of basic numeracy and statistics if the UK is to keep up with its neighbours and make the most of the potential offered by 'big data'.

It also urges the government to act on what it describes as a 'numeracy crisis' in the UK.

More at: <http://bit.ly/1Kby7wh>

Only Connect

Operational Researchers have a great many skills but does that mean they would be good at a quiz show such as Only Connect. I have to admit, I did not even know the names of the symbols. If you are quick, the programme, which was the first in series 11, should still be available via the BBC website. Whilst this programme was going out, their boss Tony O'Connor was preparing to give a talk at EURO2015 (ibid). Hopefully, you will be able to watch that as well very soon.



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www.TheORSociety.com/CareersOpenDay

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THINKING AQUATICALLY

LOUISE MAYNARD-ATEM

In mid-June, CORDA played host to a meeting of the OR Society’s Defence Special Interest Group and discussed the implications of the Aqua Book on defence analysis. The event was very well attended (so much so that I had to hunt around for extra chairs), and we had a good mix of attendees from public and private sector, as well as academia.

Before the meeting proper got underway, the Defence SIG had their general meeting, which included hearing from the group chair (Alan Robinson – DSTL), group secretary (Noel Corrigan – CORDA) and current ISMOR chair, Peter Starkey. This part of the meeting covered past and future events as well as a call for increased participation from members.

The Aqua Book is a product of the cross-departmental working group that was established to look at analytical quality assurance in the wake of the Macpherson report.

The role of the Aqua book is to:

- Provide guidance on analytical quality assurance for all types of analysis drawing upon cross-profession best practice.
- Consider the function of analytical quality assurance throughout the analytical cycle (**Figure 1**).
- Clarify the activities to be conducted and the roles of the analyst, commissioner and those supporting the assurance effort.

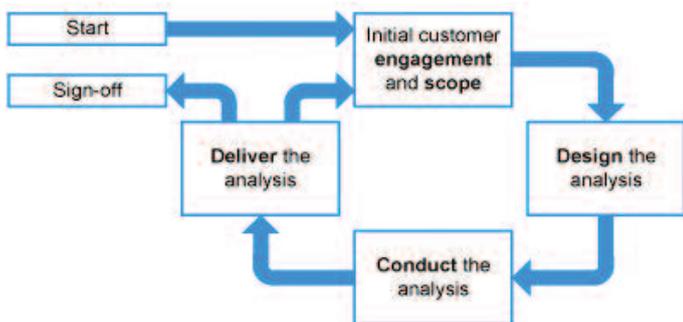


Figure 1: The Analytical Cycle

Alec Waterhouse, head of modelling at DECC and chair of the cross-government working group responsible for the Aqua book, kicked off the meeting with a bit of background on how the Aqua Book came about, its main principles and the current state of play.



Alec was followed by Nick Harris from DSTL, who talked about the Aqua book in the context of the MoD and what guidance should be available to support those producing analysis for government to



ensure it is 'Aqua Compliant'. Both Nick and Alec were keen to get some input from attendees on how third parties would be impacted by the Aqua Book and felt that the session would be an opportunity to influence the working group's agenda on future best practise guidance.

Paul Pearce was the final presenter of the day and discussed the Evidence Framework, which is an assembly of techniques from improving the quality of operational analysis. This piece of work was carried out in partnership with CORDA and developed research methods that are consistent with the Aqua book guidance.



The rest of the session was split into three breakout sessions where attendees discussed various aspects of the Aqua book:

- **The future research agenda** breakout was chaired by Nick Harris and covered:

- What guidance supporting the Aqua book needs to be made available to government and industry?

- How much of this is currently available documented good practice which can be re-used, and where are the gaps that will require new documentation?

- **Assurance of third party activities** was chaired by Judith Rawle and covered:

- What assurance policies should UK plc adopt to assure commissioners that the evidence provided has received an appropriate level of review?
- How should the assurance processes be managed and communicated?

- **Requirements for appropriate evidence** was chaired by Paul Pearce and covered:

- How might evidence requirements be characterised to allow commissioners to communicate their evidence needs to inform their decision?
- How would we use these characteristics to provide an appropriate evidence profile to inform the decision?

All in all, there was lots of healthy dialogue and representatives from the cross-government working found the syndicate sessions particularly useful; the notes from these three sessions will be combined into a mini paper to feed back into the working group.

All of the material from the workshop can be found in the Document Repository area of the website (<https://www.theorsociety.com/DocumentRepository/Browse.aspx?DocID=607>).

<OR>

CONFERENCE NEWS

EVENT: YoungOR 19	DATE: 22 – 24 September 2015	VENUE: Conference Aston Marketing Suites, (CAMS), at Aston University
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EVENT: Blakett Lecture 2015	DATE: 26 November 2015	VENUE: Grocers' Hall, London
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EVENT: 8th Simulation Workshop SW16	DATE: 11-13 April 2016	VENUE: Ettington Chase Hotel, Stratford
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TIME'S RUNNING OUT! AGAIN!

**If you have been in OR for 10 years or less –
then YoungOR 19 is for you.**

Conference Aston Meeting Rooms, Aston Business School, Birmingham
22nd-24th September

'Calling for Registrations'

**If you are presenting at YOR19, your deadline for registering is
03 August 2015.**

What not to miss at YOR19!

Careers panel - currently confirmed panel members are:

- Pavel Abores, Aston University
- Mark Chapman, Prospect Recruitment
- Jon Nicholas, LLamasoft
- Alex Phillips, IBM

Find out what the panel expect young professionals to know, learn what skills they are looking for and ask what the panel wish they knew when they were starting out.

Interactive workshops - no less than 5 great workshops:

- Analytics Deciphering a puzzle as a Data Scientist
- Consultancy From Theory to Reality – What else do I need to be an OR consultant?
- OR in Schools Running outreach events: a game theoretic exemplar
- Travel How OR is practically used within the airline industry
- Simulation Agent based simulation

Plenary speakers 3 great speakers, Stewart Robinson, Alex Phillips and Graham Rand

Speed networking A great way to make new contacts ahead of the sessions

Keynote speakers For the Energy, Optimisation, System Dynamics, Simulation, Health, Stochastic Modelling and Disaster Management streams!

Book now at www.theorsociety.com/YOR19

JOHN GRAHAM CROOKES

(21 DECEMBER 1938 TO 3 JUNE 2015)

MIKE PIDD

Like many of his generation John Crookes was eager to use his maths degree in practical ways and, after graduating from Balliol College, joined the nascent O.R. group of the steel company Richard, Thomas & Baldwin in 1960.



In 1962, RTB sponsored him to take an MSc in O.R. at Birmingham where he completed a project with Peter Pengilly (later to head up O.R. in Procter & Gamble). Their project for Wallasey Buses proved very useful and was still cited 15 years later by transport planners. More importantly, John met Ann, who had a summer vacation job at Wallasey Buses, where her father had worked. They married in 1965 and their two children, Nancy and David, were born in 1967 and 1970.

John left RTB in 1964 after doing extensive work in computer simulation, and joined British European Airways, later to become part of BA. There his enthusiasm for computer modelling, especially discrete simulation, deepened.

In 1967 John moved back north to join the developing Department of Operational Research at Lancaster University, which was then led by Professor Mike Simpson. Like all his colleagues of the time, John aimed to develop ideas and theories that would prove of value in practice. He supervised Masters student projects with great energy, working alongside the students to ensure that the sponsoring organisation received benefits from the work.

He was especially well-known for his work in discrete simulation. During 1977-81 he was *de facto* director of the Lancaster Simulation Centre, funded by SRC (the precursor to EPSRC) where he worked alongside Keith Tocher, then a visiting professor in Mathematics at Lancaster. It was during this period that John's passion for squeezing as much as possible out of small computers came to the fore, based initially on Apple II and then IBM PC computers. He had visitors from all over the world during that period, and all seemed to leave stimulated and full of ideas to pursue back home. He put much of his energy into supervising PhD students and, with them, produced some ground-breaking work.

In the earlier stages of his career, John was active in the Operational Research Society. He was a member of its Council and its General Purposes Committee, which oversaw the day to day work of the Society. He was also Chair of its Publications Committee. At various stages in his career he served on Government Advisory Committees, lending them his rapid insights into difficult technical issues.

From the mid-1980s John unexpectedly found himself in demand in Slovenia, where experts from the Edvard Kardel University of Ljubljana were developing complex models. He made several visits to the group led by Alexandra Kornhauser, a Professor of Chemistry. He especially valued the group's determination to do work that was of practical value whilst being intellectually challenging. The Slovenian group valued his insights into the development of

complex dynamic models, often using meagre computing resources.

John retired from Lancaster in 1995. During his 28 years in the department, university life had changed a great deal. There was an increasing pressure for academic publication, which he found irksome. One of his favourite statements was that his contract required him to do research, and he loved doing so, but it didn't require him write about it. This was sad because anyone who worked on research with John soon became aware of his incredible intelligence, his insight and his energy in pursuing ideas. Thankfully, he was happy for others, including his PhD graduates, to take up his ideas and to write about them, giving him suitable acknowledgement.

John was quite a character and there are many stories about his time in Lancaster. One of them relates to how we both got into hot water. It was a chilly day and we knew there was a fire alarm practice scheduled. John and I were hunkered up in the computer room where four terminals were linked to a Data General Eclipse. We were both busy, working obsessively to get some programs to work. So, when we heard the fire alarm, we locked the door, closed the curtains and carried on working. Soon we heard footsteps in the corridor and banging on the door. In came the fire officers and duly gave us a strong telling off. Apparently our personnel records were marked thereafter.

John was always a man who pursued interests with energy and enthusiasm. These changed from time to time and included an allotment, cycling, marathon running (he completed the Windermere marathon in 3hr 55m in 1986 despite his non-aerodynamic shape), Rohan clothes and an enormous polytunnel, inside which he could drive his garden tractor. One, thankfully short-lived, enthusiasm that affected his colleagues was a belief that a diet based on onions was especially healthy. Anyone entering his office during that period soon learned to take a deep breath before doing so.

When he retired, he and Ann tended their house, garden and polytunnel in Cockerham, a few miles from the University. He had been diagnosed with Type I diabetes a few years before his retirement. As time took its toll he fell victim to a vascular dementia. In 2014, he and Ann moved to Sheffield, his city of birth, to be near their daughter Nancy. It was in Sheffield that John's life both started and ended. He is survived by his widow, Ann and their two children, Nancy and David. He will be much missed.



EURO AND OTHER O.R. EVENTS

STEWART ROBINSON,
LOUGHBOROUGH UNIVERSITY
PRESIDENT



‘By the time you read this you will have either attended EURO or missed it. Whichever, there are two more opportunities this year to engage with OR Society events.’

As I write this I have just finished preparing my speech for the opening ceremony of the EURO conference in Glasgow.

I did briefly ponder hiring James Bond and then parachuting my way into the auditorium ... but someone more famous than me has already done that.

EURO is just a week away (and probably a week or more behind once you read this). With more than 2,000 delegates expected, it will be the largest OR conference ever held in the UK. I am sure the founders of the Society would be amazed to see a conference of this scale landing on our shores. It reminds us that O.R. is vibrant and very much alive.

Conferences of this scale require a huge amount of commitment and effort to organise and we are particularly indebted to the efforts of Tim Bedford and Val Belton in leading the organisation of EURO. As always, they have been ably assisted by Hilary Wilkes from the Society’s office. Of course, there are many others from the UK and across the European OR Societies that have helped to put the conference together.

We are excited that we are bringing one particular UK feature to the EURO conference. Making an Impact, which is normally part of our annual conferences, is making an appearance in Glasgow. Through Making an Impact a series of events will focus on the needs of O.R. practitioners, as well as providing an opportunity for academics and practitioners to engage in discussions of practical significance. This is of increasing interest to the academic community who are ever more tasked with demonstrating that their work actually has an impact.

By the time you read this you will have either attended EURO or missed it. Whichever, there are two more opportunities this year to engage with OR Society events. YoungOR takes place 22-24 September at Aston University in Birmingham. The conference is aimed at those in the first 10 years of their O.R. career. It provides a vibrant atmosphere for sharing ideas from academia and practice, and for networking with colleagues, old and new. The Society’s website provides up-to-date information on YoungOR.

The second opportunity is the Blackett Lecture, which is being held at the Grocers’ Hall in London on 26 November. The speaker this year is Kenneth Cukier who is the Data Editor for the Economist. Kenneth recently published the book ‘Big Data: a revolution that will transform how we live, work and think’ with Professor Viktor Mayer-Schonberger from Oxford University. The talk is certain to be an informative tour of how big data is transforming our lives, and a chance to reflect on how big data might transform our work in O.R.

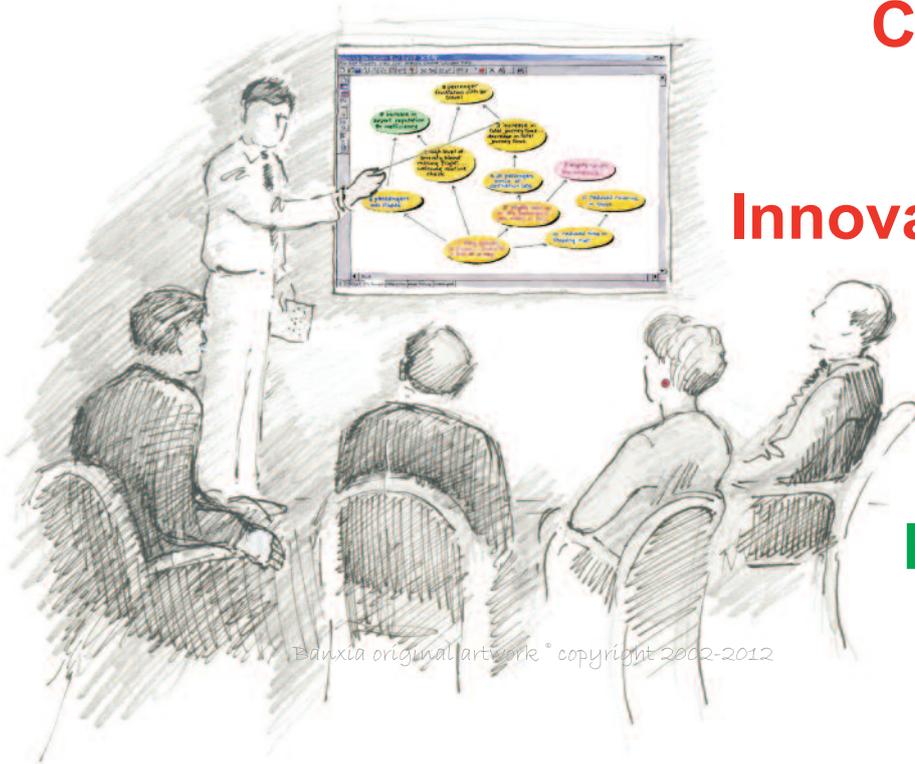
If you can’t make these events, then there are the regular Regional Society and Special Interest Group meetings, including the Analytics Network, many of which are free to attend. Details of these events can be found through Inside O.R. and the Society’s website.

These events and the strong attendance they receive remind us that O.R. is alive and well. If you haven’t previously taken advantage of these opportunities for meeting with others from O.R., then I strongly recommend that you do. They are invaluable for updating your knowledge of O.R. and in developing a network with other O.R. workers. I look forward to seeing you at events past (EURO) and future!

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EURO2015 – A VERY BRIEF OVERVIEW

JOHN CROCKER

The first thing, you definitely need to have your wits about you. The second is that you must do your homework. The third is that you should go on an orienteering exercise in the Himalayas for at least a week before the event. Alas, I failed on all three counts.

I arrived in Glasgow in good time but the taxi driver obviously thought I was in need of some strenuous exercise so he dropped me on the wrong side of the munro upon which the University of Strathclyde is built. I found out which hotel I had been booked into, got my badge and tickets and then picked up the programme – unfortunately the bag it came in was not fitted with wheels so my knuckles are rather sore from where they have been dragging along the ground.

It was an interesting idea to link the three cities: Glasgow for lunches and networking, Edinburgh for plenaries and Belfast for sleeping. Although there were a number of speed-dating sessions, alas there were no speed-skating sessions – getting between the venues left one with very little time and even less breath to put these skills into practice.

There were up to 84 streams running in parallel in each of the four 90 min sessions each day with four speakers per session. In addition, there was a plenary session in the evening from 4:30 until 6 for which one needed a ticket as the Barony, the hall in which they were held only had capacity for about half the number of delegates. I guess the architects had not thought the sun would ever penetrate to ground level let alone be so bright as to white-out the screen onto which the slides were being projected. With several of the presenters this proved not to be that much of a problem since it was almost impossible to read the content without the aid of a Hubble telescope (even from the front row). Perhaps we could get Zeiss or someone to sponsor a prize for who can get the most 'information' onto a single slide.

Unfortunately, I missed the opening ceremony – I was in the right

building at the right time but because I had not done my homework, I was alas unaware of this until it was too late. I also missed the closing ceremony and the handing over of the baton to the Polish OR Society (as I wanted to get back in time to put this issue to bed).

In this issue, you will find a number of articles relating to presentations made and, no doubt there will be several more in the forthcoming issues. We hope to be able to put film of some of the talks on our own website along with those which will be available on the official EURO website.

This conference was the first 'EURO' to include 'Making an Impact'. Although I did not attend all of the sessions – it would actually have been impossible as several ran in parallel – those I did were well-attended and, as far as I could tell, much appreciated by their audiences. I am not sure what great insights I gained from trying to balance a marshmallow on the top of a tower made out of [uncooked] spaghetti held together (or not) with unsticky masking tape but it was 18 minutes of great fun.

There was, as far as I am aware, only one major disaster. The company with which the booking for the Conference Dinner had been made went into liquidation and an alternative venue had to be found at extremely short notice. That the organisers did so was something of a miracle, that they found such a perfect one was truly unbelievable. We all had great fun playing with all the exhibits at the Glasgow Science Centre while we waited to be seated. The views were magnificent as the sun slowly set over the Clyde estuary and the food was not at all bad (by conference standards).

<OR>

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EURO2015: DIARY OF A MAKING AN IMPACT ORGANISER

ROSEMARY BYDE

July 2014

I have agreed to help organise the EURO conference. It is next July, no problem.

September

First organising meeting today. Apparently it is usual to have an external conference organising committee for EURO. It looks like between them, Euro, the OR society, the conference chairs and the programming/organising committee, most of the work is already covered.

December

I've joined the MAI practitioners' sub-committee. Our task: alongside existing case study streams, to boost the practitioner focus at the conference and take a successful UK event to a European scale.

I persuade Galina Andreeva to join us as our academic representative and I'll run a workshop. I thought mentoring sessions were a good idea. When I said so, I was promptly assigned to organise that too!

May 2015

We don't have much time, but it's quite fun. I've chosen rooms, made sure there aren't clashes for similar topics and got a good spread of things to do across each day.

Meanwhile, other sub-committee members are busy setting up sessions, producing materials and tweeting away. Ruth Kaufman (MAI Chair) is trying to keep us all under control and reminding us of our ever-approaching deadlines.

July

I blinked and it's July.



Continued on next page

Although other activities have been tried and tested at the UK conference, mentoring is completely new. After collecting details from mentors, crafting instructions and allocating time slots, there are still last minute changes.

Saturday 11th July

Furiously polishing up my workshop and preparing materials. I must thank my colleagues for directing and acting in videos for me! I was determined to finish before Sunday, and as the clock ticked over to 00:01, I was ready.

Sunday 12th July

Off to Glasgow – via my office to deal with last-minute printing.

Strathclyde University's Technology Innovation Centre (TIC) was buzzing. After testing out the registration process, I found our team in a corner of the exhibition area happily answering questions and handing out our brochures.

I took some down time to sort out my personal timetable. Much easier than at a normal conference, despite the extra choice of streams. As an organiser, the things I was helping with were fixed. I had also fallen for our own marketing of several sessions! That only left two slots left to fill - an easy job.

Monday 13th July

A slow start for some today; it seemed like everyone had their noses in their programme pages and were studiously avoiding the actual events. So speed networking was select, but still worthwhile. The workshops were filled to capacity though – even the one at 8:30.

I've spent all day running backwards and forwards between the Barony (for Mike Trick's keynote and the 'Excellence in Practice' awards sessions) and the MAI desk to hand out brochures, promote the mentoring and other sessions and redirect all the lost people!

The first mentoring session had some teething problems - mentors with no mentees, would-be mentees who hadn't signed up and one AWOL mentor – but everyone who did get together was very positive about it.

Tuesday 14th July

- 08:30 Go to the academic-practitioner bazaar. Great fun!
- 10:00 Find someone to 'look after' the next mentor session.
- 10:05 Head off to set up my workshop. Make sure people knew what they were letting themselves in for (i.e. had read the description, not just the title). I had to squeeze the timings at the end but got good feedback.
- 12:10 Pick up a lunch bag and went to learn about lessons from manufacturing on the pretext of 'chairing' – which was quite unnecessary!
- 14:10 Back down to the TIC to set up for the careers exposition, then non-stop talking to students about RBS's analytical roles.
- 16:15 Grab tea and biscuit and headed over to the Barony for the plenary on the future of cities.
- 17:30 Return to my room to take shoes off and organise the jumble of papers in my folder, plus jot down thoughts on how to make both my workshop and MAI run even better.
- 18:30 Just about done in time to get out to the conference dinner.

From my colleagues' expressions I suspect this was typical of the day we were all having – exhausting but rewarding!

Wednesday 15th July

This morning, the end was in sight and I was pleased to have a plan that looked more like a normal conference day. I just had to make sure workshop facilitators had feedback sheets and look after the mentoring session. I was surprised to have my own mentee! It went well.

I found time to enjoy a plenary on transportation trends, a workshop on O.R. in Schools and some self-reflection and discussion on professional identity in 'Who do you think you are?'. It was soon time to help clear up the MAI desk and leave it for the last time.

At the closing session, awards were made and everyone was thanked. I was on the edge of my seat, but it seems someone forgot my prize ... Then future conference organisers showed us adverts for possible holiday destinations. Poznan (EURO 2016) or Quebec (IFORS 2017), anyone? I'm afraid I might still be recovering!

<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>

EURO2015 ACT 1, SCENE 1

JOHN CROCKER

It is first thing on Monday morning in Glasgow and it is raining. I have done my bit of networking over breakfast so am now off to the first session of EURO2015 which, as luck would have it, is in the McCance building – the one nearest to the hotel.

Sue Merchant, the stream chairlady is keen to get everyone settled and start the proceedings pointing out that there are four presentations to fit into just 90 minutes and that every chairperson has been given a gadget which makes a noise after 10, 15 and 18 minutes. (One has visions of a Monty Python foot being activated after 20 min if the speaker has not finished). The stream is appropriately number '42' and is entitled 'Case Studies in O.R. Analytics 1'.

John Ranyard sets the scene with 'Reassessing the Scope of O.R. practice: the influence of problem structuring methods and the analytics movement'. From a worldwide survey of O.R. practice based on 254 responses from 28 out of the 49 IFORS countries it would appear that there is still very much a client lack of awareness and understanding; a low usage of 'O.R.' (< 25%) and; a general ignorance of O.R. practice in many countries.

The research – practice gap is widening with both journals and conferences tending towards academia. A lot of work is going into trying to close this gap particularly in the US and UK. John cited the 'Science of Better' branding and website, the launch of the new *Impact* magazine and the 'Making an Impact' streams at past UK conferences and for the first time in a EURO conference. John felt that the US persistence in not recognising 'soft O.R.' and problem structuring methods was not helpful.

He concluded that Analytics enjoyed a much higher profile and greater understanding than O.R.

The 'foot' was not activated and there was a smooth handover to Martin Rahman and Gail Mawdsley from the West Yorkshire Police who talked about National Police Air Service which was formed in 2012 by a process of consolidation and rationalisation of the many separately operated police aircraft around the country. The team had used a simulation model to estimate the level of coverage that could be achieved with different numbers of aircraft operating from different numbers of bases. Before NPAS there was 25 aircraft (both fixed wing and helicopters) operating from 23 bases. Under the new scheme, there are now 23 aircraft (19 helicopters and 4 fixed wing) operating from 15 bases all on 24/7 which provides a more effective and efficient service across the country and has achieved a saving of around 14%. As yet the service does not deploy any unmanned aircraft but this will no doubt change in the near future.

Andrew Cooper (ORH) was next on with a study of the London Fire Brigade and again the requirement was to find a way to get more from less. At the start of the exercise, the LFB deployed 169 'pumps' operating from 112 fire stations. Again it was decided to use a simulation model. It was also necessary to make a few underlying assumptions: pumps would always take the quickest route to a fire; the number of fires and their locations would remain constant; fire stations could not be moved and; priority should be given to 'serious' incidents – those requiring at least two pumps. The general requirements were that the first pump should be at the scene within 6 min (average) and the second within 8 min (average). It was decided to look at from 56 to 112 stations and from 84 to 169 pumps but it soon became evident that it would not be practical to run every combination so a sub-set was selected. The recommendation was for 155 pumps situated at 102 stations. Following an objection by the Fire Brigade Union, this went to a judicial tribunal which found in favour of the analysis.

The final presentation by John Mobbs (also from ORH) was perhaps predictably about the number of ambulances and ambulance stations, this time in the East of England. In this case, there are a whole range of metrics depending on the type and severity of call out. With ambulances, it is also not simply a case of how long it takes to reach the scene, there is also the question of treating patients at the scene and getting them to hospital if required. For stroke victims, for example, there is a 'clinical quality indicator' which sets targets on what percentage make it to hospital within a certain time.

Although there were some subtle and some not so subtle differences, all three problems were about how to get more for less without seriously affecting the performance. What makes these types of problem tricky is that there is no simple cost function – there is no agreed monetary cost put on being t min late or, indeed, saving on taking x min less than the average time.

If this was a flavour of what was to come, I could see I was in for a most enjoyable three days.

GORS IS BLOOMING

NIGEL CUMMINGS

Hot from EURO2015, held this year in Glasgow!

Tony O'Connor, Chair of the Government Operational Research Services (GORS) gave a keynote talk entitled - O.R. at the heart of Government - how the Government O.R. Service influences decision making.



Tony O'Connor,

The flavour of the month with the current administration is 'evidenced-based decision making'. The government is very much aware that people in the UK trust scientists very much more than they trust politicians, indeed in a survey the two professions are almost at the two extremes. (Civil servants, incidentally scored 55% which placed them above half way.)

In the UK Government the use of analysis and evidence is well established and Operational Research plays an important role alongside the more traditional analytical disciplines of Economics, Statistics and Social Research.

Since GORS was created in 1986, it has grown from around 100 members to 563 and is expected to reach 600 in the near future. Previous to 1986, each Department within the civil service had its own O.R. people and in many ways, this still persists, for example of the 563, 126 work for DWP (Works and Pensions), 106 HMRC all the way down to one person working in the Welsh Office. (Defence, incidentally, has its own separate organization and is part of Dstl.)

It is interesting to note that following the 'Civil Service Reform Plan' the aim is to reduce the number of civil servants from around 400,000 to 380,000 by the end of 2015 but, at the same time, increase the number of O.R. people. Apart from being very big, the CS is very complex – each department has influence over different parts of the UK – some act for the whole country, others (indeed, most) for only certain parts. Some are directly responsible for the department's activities whereas with others varying amounts of the work is done through various types of contractors and sub-contractors – everyone is different.

In 2013-14, the UK government spent £720 billion of the £624 billion income (from taxes, etc). This had to pay for 18.2 million hospital admissions and the handling of 7 million criminal offences, for example – it is clearly big business.

GORS personnel frequently worked with the Government Statistical Service, the Government Office for Science, the Government Economic Service and the Government Actuary's Department and invariably in multi-discipline teams.

'We are trying to embed data science in government, data science for us is what analytics is for the OR society. As O.R. practitioners GORS members do data science, and we will continue to do it'.

GORS does not manage O.R. people, it tries to give them a professional direction.

GORS personnel operate in and support government departments using a very wide range of tools and techniques. But GORS works for government, things get done to us, departments get restructured and reorganised... we provide advice to ministers, ministers are then free to act upon that advice if they so choose.

AUTOMATIC ALGORITHM CONFIGURATION

NIGEL CUMMINGS

Thomas Steutzle, a Senior Research Associate of the Belgian F.R.S.-FNRS, working at IRIDIA, gave the first 'tutorial' at EURO2015 in Glasgow.



Thomas has written numerous papers on the foundation and application of stochastic local search, as well as a comprehensive work co-authored with Marco Dorigo, on Ant Colony Optimisation. He has extensively published in the wider area of metaheuristics including 20 edited proceedings or books, 8 journal special issues, and more than 200 journal, conference articles and book chapters.

For this tutorial, his chosen topic was Automatic Algorithm Configuration: Advances and Perspectives. It concerned the design of optimisation algorithms for computationally hard problems, and detailed how the processes involved in such optimisations are often time-consuming and difficult.

This was largely due to a number of circumstances such as the NP-hardness of most of the problems to be solved; the difficulty of algorithm analysis due to stochasticity and heuristic biases and; the large number of degrees of freedom in defining and selecting algorithmic components and settings of numerical parameters. Even

when using off-the-shelf software such as IP solvers, their performance strongly depended upon getting the settings right of a large number of parameters. Any of which were capable of influencing search behaviour.

There has recently been increased use of automatic algorithm configuration methods, these methods had been developed primarily to search large parameter configuration spaces for identifying superior algorithm designs with performance improving parameter settings. These configuration methods have proved themselves useful in the development of high-performance algorithms. His talk also provided reasons for why it was advantageous to address algorithm design and configuration by algorithmic techniques.

Auto algorithm configuration is an improvement over manual configuration. It provides improvements over manual ad-hoc methods for tuning; it reduces development time and human intervention and; it provides support for end user algorithms.

Automatic configuration also leveraged computing power for software design. In future he thought more powerful configurators would be developed as well as increasing numbers of complex applications, and there would in addition, be gains in the area of exploitation of data and best practice.

He also reserved some of his presentation time, to describe the main existing automatic algorithm configuration techniques available, and to detail some examples of successful applications in mixed-integer programming solvers, the generation of hybrid stochastic local search algorithms, and the design of multi-objective optimisers.

<OR>

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ELSIE CROPPER SHIELD FOR BEST PAPER AT YOUNGOR 19 CONFERENCE, 22 – 24 SEPTEMBER, 2015

J.C. RANYARD



The Elsie Cropper Shield was instituted in memory of Elsie May Cropper, a senior member of the Operational Research Executive of British Coal, who died in service in 1989 at the age of 44. Elsie had always been a strong supporter of young and trainee O.R. staff and was always supportive in their further development.

All presenters at YoungOR 19 are eligible, except for Plenary Speakers, those giving tutorials or workshops and those who would not normally be eligible to attend the YoungOR conference.

All YoungOR 19 delegates are invited to rate the presentations that they attend, using a pro forma which is available at each session. The session chair will collect the voting papers at the end of each session and pass them on to the committee. The Organising Chair will appoint two judges, one of whom will be a member of the organising committee. The judges will scrutinise the voting papers and decide on the winner.

The following criteria will be used as guidelines:

1. Impact of the work – both quantitative and qualitative. For example, does the work have current/potential demonstrable

benefits; has it resulted in a better understanding of the problem area or improved management practices?

2. Technical Content – for example, appropriate choice of techniques/methodologies.

3. Quality of presentation – for example, logical structure, clear slides etc.

The winner will have his or her name inscribed on the Elsie Cropper Shield and will be invited to attend the Blackett Lecture on 26 November 2015 at which the shield will be formally presented. The winner will also receive a commemorative plaque. The winner of the Shield will be announced on the last day of the conference after all eligible talks have been presented.

<OR>

NEWS OF MEMBERS

The Society welcomes the following new members,

TERRI AMOS, London; JOSEPH ELLIISTON, London; OLAWALE FAWEHINMI, Cambridge; ANDREW GREGGAN, Reading; RAPHAEL HAUSER, Oxford; ROSS KAZAKOV, Bulgaria; RYAN LOXTON, Australia; LIDY-MARIE OUWEHAND, Netherlands; BYRON SONG, Northants; MICHAEL WILLIAMS, Hants; MATTHEW WYNNE, London; NICOLA YATES, Milton Keynes; RYALIN ZHANG, London;

and Reinstated members,

PAUL HEWSON, Plymouth; SARAH LODGE, Hants; JOHN O'HARA, Hants; JOANNA ORZECZOWSKA, Northants; ALLISON STEELE, Surrey;

and the following student members,

KHULOOD ALYAHYA, University Birmingham; LUCINDA ARCHER, University Cardiff; ARANTZAZU ARROSPIDE, Spain; KRISHNA BALTHU, Aston University; JULIANNE BAYLEY, University Derby; LAURA BOYLE, Queen's University Belfast; ADAM CONNOLLY, University Cambridge; TAMER ELBOGGHDADLY, Portsmouth

University; OLUWAWUNMI FALAYE, University Lancaster; AYUSH JOSHI, Birmingham; SAOWANIT LEKHAVAT, Brunel University; HUAL TEIN LIM, Malaysia; HAMISH LUNAGARIA, University of York; CRISINA NATALY, Santiago de Compostela Spain; SHANE O'MEACHAIR, Trinity College Dublin; LEONARDO PELLICCIOTTA, Italy; VIOLINA SARMA, Cardiff University; RAN SNITKOVSKY, Israel; DANIEL WILLIAMS, University South Wales; CONG XU, University Manchester; HUAYING ZHU, University Manchester

Total Membership

2768

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 AORS (Associate)

Hugh AGGLETON

<OR>

MY FIRST PROJECT ... AND BEYOND

MIKE PIDD

Though I later became an academic, first at Aston and then at Lancaster Universities, I once had a real job.

After an engineering degree at Brunel University I headed up to Birmingham to take the MSc in O.R. I wasn't really a model student, partially because I married half way through the course and so had my mind on other things. I scraped the degree and looked for work, needing to stay in Birmingham as my wife continued her medical studies.

Fortunately, large employers outside London still had O.R. groups and I found a wonderful job working for Cadbury Schweppes in Bournville. My love of chocolate has never disappeared and the job would have been perfect if they'd also owned a vineyard. Later I bought a house in Bournville, and could enjoy the sweet aroma of chocolate each morning.

I started in 1971, when computers were large beasts that churned away in air conditioned rooms, their every needs met by a high priesthood of technicians, sometimes in white coats. The computers mostly ran payroll and invoicing systems and were only sometimes available to lowlife from the O.R. Department.

I had been at Brunel whilst the University was building its Uxbridge campus, a project beset by years of delay. Probably because of this, we had no mainframe computer for a couple of years and students were able to play on terminals connected to a time-shared computer service. I'd lost interest in engineering, though I could more than cope with the work, so I started to write programs in a language hardly anyone has heard of since: TELCOMP.

TELCOMP was a simple interpreted language rather like early versions of BASIC. If I recall correctly, its endearing features included GOTO statements which could be computed. That is, control could be shifted to another point in the program dependent of the current value of a computation. For younger readers I should add that GOTO statements were banned some years later, on pain of death. This followed Edgar Dijkstra's article 'Goto statements considered harmful'. Computed GOTO statements weren't just harmful, they were the drug of choice for serious users.

When I joined the O.R. Department at Cadbury Schweppes I was placed in the section that included the statisticians. This was not my natural habitat, but I had an excellent boss, Rod Pipe, who saw my talents as well as my limitations. For some reason or other he'd been given a project that involved working with external consultants who were developing what were then known as planning models, for the confectionery marketing people. This was

before the days of PCs and spreadsheets, so any computer programs had to be hand-coded.

The consultants had persuaded their clients to buy computer time from a bureau on which they would develop simple planning models. The models would enable the marketeers to estimate the effects of different types of marketing expenditure. The models were crude, based on the marketeers' own views of what might happen and were slow. They were classic 'what if?' models. More to the point, as I discovered at my first meeting, they were being developed in this obscure language TELCOMP. I was the only person in the company who knew it. What an opportunity.

Hence, in my first project I spent much of my time working through the TELCOMP programs developed by the consultants so that we could have a user manual and also could fully understand what the models were doing. In addition I started to develop my own models in TELCOMP for clients in the different marketing departments of the Cadbury Schweppes business. Later, as I was about to move to Aston University, I came across John Little's excellent paper 'Models and managers: the concept of a decision calculus'. This made me realise what I'd been doing. Much like the character in the Feydeau farce who was surprised to find he'd been speaking prose all his life, John Little's piece helped me understand that I'd been developing simple decision support models that users really, really valued.

Later, we replaced TELCOMP with a version of BASIC offered by another remote computing service. For much of my time there,

'I started in 1971, when computers were large beasts that churned away in air conditioned rooms, their every needs met by a high priesthood of technicians, sometimes in white coats.'



SOCIAL MEDIA MONTHLY FAVOURITES



What's hot on Twitter from @TheORSociety community of 1,586 followers...

<p>tom monks @tommonks1 Jul 7 Me banging on about healthcare modelling again. + an interactive model for you to enjoy: https://nihrcclahrcwessex.wordpress.com/ @wessex_clahrc #ThisIsOR</p>	<p>Charlene Timewell @ORinSchools Jul 3 @stem_maths Our volunteers @TheORSociety @ORinSchools can't wait to share our new TSP theme park resource with your students! #thisisor</p>	<p>Benjamin Schumann @Simulation101 Jun 24 Impressed by the super-efficient security at @Gatwick_Airport. Must have taken great #simulation skills because #thisisor</p>
<p>KingsNortonGirlsSch @KNGSLife Jul 6 Thank you @TheORSociety for delivering an excellent session for our Year 12 mathematicians.</p>		<p>Graham Sharp @sharpresearch Jul 2 Yesterday was my last day @TheORSociety after 19 years. Thanks to all who helped. A few weeks in France, then back to find new challenges</p>
<p>HR magazine @hrmagazine Jul 7 Organisations are failing to prioritise workforce #analytics HR magazine: http://bit.ly/1KJDzIB</p>	<p>John Poppelaars @ORatWork Jul 5 Not a surprise, Greece records lowest life satisfaction rating of all OECD countries http://gu.com/p/4aa3a/stw #analytics</p>	<p>Tamara Dull @tamaradull 13 Jul "If we ask big questions, big answers will materialize." A Human Perspective on the Power of #BigData http://ow.ly/PrkFF</p>

Who the OR Society is following on twitter:

 <p>Ian M Mitchell @m_mitch1 Amesbury, Home of Stonehenge Operational Researcher and Mayor 2013-14</p>	 <p>Jacqui Taylor @jacquityaylorfb London · flyingbinary.com Web Scientist, #IoT Entrepreneur, Author, Datajournalist Co-Founder of FlyingBinary CEO #BigData #OpenData on/off Cloud. @odugUK member, maker, and architect</p>
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The OR Society on LinkedIn: join the 3,428 members who do so ...



What's your favourite presentation title from the EURO2015 conference programme? 

Ruth Kaufman, President Elect, The OR Society

Ruth asks a very intriguing question. So you might have been to EURO2015 – Ruth suggested 'Cloud Powered Brewing (Simon Taylor, TD-34)' will take a lot of beating. Ruth *et al.*, – *did you find better?*

You might also wish to add to Ruth's discussion your highlights from the conference or kick off a debate on some of the issues raised in a new post.



Grand Challenges for O.R.
Jane Parkin , Associate Faculty at Leeds University Business School

Jane posted in May some questions to gain responses on "Grand Challenges" and understanding how we as an OR community should tackle these? This Built on a Leader article with Miles Weaver in the May issue. This was followed up at the EURO2015 as part of the Making an Impact series with invited guests from the Voluntary Action Fund (Scotland). Keith Wimbles (CEO, VAF) and Steven Paxton (Business Development Manager, VAF) outlined their perspective on the "Grand Challenges" in a Scottish context. The following questions were posed and discussed with an audience of O.R. professionals:

- 1) Discuss the nature of the problems and issues in relation to the host of OR methodologies, tools and techniques;
- 2) Explore how O.R. professionals can best promote and develop meaningful responses to make an impact in the areas identified.

Jane and Miles would appreciate further comments on LinkedIn to hear your views on what we could do as a community? *Suggestions will be published in the next issue.*

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SETTING A BAD EXAMPLE

LOUISE MAYNARD-ATEM

The idea for this month's article stemmed from a discussion I was involved in at the recent Defence SIG meeting (see 'Thinking Aquatically', *ibid*).

We were talking about the recently published Aqua Book (which provides guidance on quality assurance) and the implications it may have on defence analysis, when another attendee asked who would be qualified to act as the assurer of a piece of analytical work and does that person have to be an analyst.

My immediate answer was 'well of course they have to be an analyst', though after some healthy discussion I walked away with a far weaker stance on the issue. Subsequent discussions with a senior colleague prompted me to wonder how anyone (analyst or not) would be able to recognise poor, or at the very least inappropriate, analysis; so my article this month is a look into the circumstances that may lead us, even as analysts, to draw incorrect conclusions or identify inappropriate approaches to problem solving.

Get in touch with me on the usual email address if you have any thoughts on this month's article or if there's anything else you'd like to bring to my attention (lmaynardatem@live.co.uk). Do you have any examples of poor analysis that could lead decision-makers to draw incorrect conclusions?

Bad Data

Any analyst is only as good as the data they are working with and there are a number of ways in which bad data can arise depending on the process used to generate them. De Veaux and Hand discussed this topic in their 2005 paper **How to Lie with Bad Data**, explaining that data can be distorted from the outset during the initial collection phase, or when the data are transcribed, transferred, copied or merged. It is also possible for data to deteriorate, change definition or become less representative of the process they were designed to measure over time. The breakdown in the collection phase can occur whether the data is collected by a human or by a machine.

Data can be incorrect in two primary ways; either there is an element of data distortion or there is data missing from the dataset. In the latter case, it is relatively simple to identify missing data points, however in the case of data distortion it is far less obvious to know when there is an error in a data set. Depending on the size of the dataset, it can be possible to prove the presence of errors, but almost impossible to prove their absence.

Ensuring good data collection through survey and/or experimental design is a vital first step when you are in the position of being able to design the data collection yourself. However, in a situation where you have to use data that is given to you by a stakeholder/customer, it is important to ensure that this data has been adequately verified and validated, such that you are confident it is appropriate for the analysis you wish to carry out.

Misuse of Statistics

I think everyone is familiar with the saying 'There are three kinds of lies; lies, damned lies and statistics' (attributed to a number of people including Mark Twain and Benjamin Disraeli) as a phrase that describes the persuasive power of numbers. In 1954, Darrell Huff wrote the still widely quoted **How to Lie with Statistics** as an introduction to statistics for the general reader (it's worth noting that Huff himself was a journalist and not a statistician).

There are a large number of ways in which statistics can be misused including discarding unfavourable data, collecting biased samples and asking loaded questions. As analysts, we're in a far better position than most to appreciate when stats are being used inappropriately, as we are more likely to ask the right contextual questions around the information we are presented with. Figure 1 shows the ozone hole over Antarctica in November 2009. In May 1985 the existence of the huge 'ozone hole' was documented by research published in Nature magazine: '*NASA soon discovered that the spring-time 'ozone hole' had been covered up by a computer-program designed to discard sudden, large drops in ozone concentrations as 'errors'. The Nimbus-7 data was rerun without the filter-program and evidence of the Ozone-hole was seen as far*

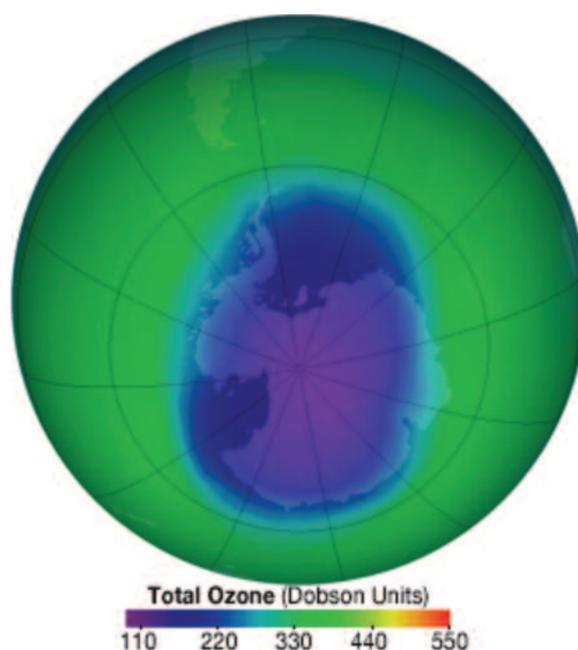


Figure 1: The Ozone hole over Antarctica, November 2009, Blue zone indicates ozone level <220 Dobson units; source NASA

back as 1976'. This gives us an example of how data can, either deliberately or inadvertently, be excluded as an error or outlier and lead us to draw incorrect or incomplete conclusions.

Identifying an (In)Appropriate Approach

The key word in the title of the section is Appropriate (or Inappropriate depending on how you want to think about it). Any analytical approach to problem solving must be appropriate to the problem being solved; if an inappropriate process is chosen, the approach can be executed to the highest possible level of quality but may still fail to yield a decent solution.

Using problem structuring methods as the first step in any analytical process is vital in ensuring that the right approach is selected – failure to consider alternatives is one of the most common causes of flawed or incomplete analysis. By breaking a problem down into its constituent parts, it is possible to gain a better understanding of the problem as a whole and to prioritise certain areas according to the time available and the level of complexity required by the customer.

It is possible, by asking some key questions, to identify if the approach you've chosen is the most appropriate, such as:

- How well does the analysis answer the question?

- Are the components of the solution aligned with the requirements that were agreed upon at the beginning of the work?

It is common for such questions to be asked as a project approaches completion, however by asking them throughout the project lifecycle, you are more likely to gain confidence in your chosen approach. Alternatively, through periodic questioning, you will likely identify issues at an earlier stage, giving you more time to amend them.

So what...?

As analysts, it is vital that we consider all of the points described above when either carrying out analysis, or providing quality assurance of the analytical work of others. The Aqua Book provides guidance on how to produce quality analysis specifically for government, but the principles of good quality assurance that it discusses can (and should) be applied to any sector where analysis is used to help inform decisions.

If you're interested to read it, the Aqua Book is available to all at the following address:

<https://www.gov.uk/government/publications/the-aqua-book-guidance-on-producing-quality-analysis-for-government>

<OR>

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OR-30

August 2015

If you read July's 'OR – 30' very carefully, you will have noticed that there was a paper by Ruth Davies 'describing a kidney transplant simulation'. I know that because in the August issue (*JORS* 36.8), Ruth has written another paper in which she cites the paper mentioned last month. In research she did at Southampton (funded by SERC, now EPSRC) as a follow-on to her PhD Dr Davies did 'An Assessment of Models of a Health System' over a 15 year period including one of her own which dated back to 1978. Several of the models were Markov or semi-Markov. There were also several 'synchronous simulation' models – something I had not previously come across – and just one discrete event simulation.

Of the models assessed, Dr Davies writes, 'The major failings of all the previous models have been the poor definition of system boundaries, which excluded the resources patients use, and the constraints on those resources. Many were used for large population groups, ignoring local differences among decision criteria and survival data, comparing one renal unit with another.' They did not meet basic criteria mainly because the modelling techniques used. Some of the assumptions made were 'very dubious'. 'These models were thus, without exception, all deficient in reflecting the system properties. They were neither robust nor designed for local staff to enter data in order to explore the implications of different policies.' I wonder if anyone, anywhere is using Markov, semi-Markov or synchronous simulation – no doubt I will get the usual full mailbag of examples!

Also in the same issue, there is a paper by Robert O'Keefe

(University of Kent at Canterbury) entitled 'Investigating Outpatient Departments: Implementable Policies and Qualitative Approaches'. Robert notes that using models to reduce patient waiting time was an early application area of O.R. He says that few general practices operated an appointment system in 1964 but such practice was, by 1985, commonplace. The average waiting time in an outpatient department (of an NHS hospital) was 45 min (in 1985) 'representing very little improvement since the formation of the Health Service [in 1948]'.

In theory the system is simple but the reality is quite different. Although patients are generally punctual, the same cannot be said for doctors. Sessions are usually short so steady-state conditions are rarely achieved. Patients may also need to be seen more than once – they may be sent for x-rays or blood tests and then return to see the same doctor possibly as a priority. O'Keefe recognized that the problem was 'primarily political'; doctors needed to be aware of the effects of their actions on queuing times; a change in policy should be incremental (and above all implementable) and; the system should be monitored to ensure any changes were and would continue to be effective.

Davies, R. (1985), An Assessment of Models of a Health System, *JORS* 36.8 pp 679-687 ([jors1985125a.pdf](#))

O'Keefe, R.M. (1985), Investigating Outpatient Departments: Implementable Policies and Qualitative Approaches, *JORS* 36.8 pp 705-712 ([jors1985128a.pdf](#))

<OR>

OR-20

It's not easy to be unsleazy

Ethical dilemmas O.R. has to face

The Process of O.R. Study Group held a meeting on Professionalism and Ethics on Tuesday 6 June. At a time when ethics is taking an increasingly high profile in business generally and the notion of professionalism in O.R. on the agenda it seemed appropriate to explore the way in which these two themes overlap in O.R.. Three speakers with different perspectives on this topic outlined the rich variety of issues that arise for practitioners and those seeking to understand practice when the focus is on the sometimes conflicting need to be professional and to be ethical, the conflict between the two being aptly illustrated by the use of the terms 'professional foul' or 'professional behaviour' to mean something which is not always seen as being acceptable from an ethical standpoint.

Professional and ethical judgements

Bob Harris of Andersen Consulting drew on his vast experience of working on projects with the public sector to describe the rich

variety of situations when judgemental decisions have to be made during the course of consultancy work. Judgemental decisions are those where ethical and professional concerns come to the fore and these can be found through the full range of consultancy activity. For example, to what extent should a consultant be honest in terms of the length of time a project might take or cost, particularly if the risk of being honest is to lose the work? How appropriate is it to direct clients to a particular solution? Should recommendations be self-serving in terms of setting up potential future projects with the same client? These are many other points where professional and ethical judgement has to be exercised were raised during the presentation. What is clear is that at present there is no clear basis established to guide practitioners in these matters and little theoretical framework developed to help in the provision of this guidance.

Drawing Lines

Howard Malin of the Department of Health took the discussion forward by translating the abstract question of relating ethics and professionalism to the specific problem of deciding where to draw

the line between being ethical and being practical. The ubiquitous ethical problems, he contended, could not be tackled in a rational manner and therefore to search for a rational framework within which these matters could be addressed was not appropriate. Therefore what is required is the focus provided by deciding where to draw the line. Once the line is drawn by an individual care then has to be taken not to step over it, for once the line is moved it becomes easier to move it a little further and the original benchmark between ethical and practical behaviour is lost. What is required for individual practitioners is support and guidance on deciding where to draw the line in the first place and how to resist moving that line once established.

Professions and O.R.

Jonathan Rosenhead of the London School of Economics took as a starting point the origins of the professions. In the case of the professions such as medicine, law and accountancy the basis of the creation of professional bodies was to safeguard the public interest from individuals claiming to offer particular expertise. The relationship between professionals and their clients was one between two individuals and professional bodies served to protect the client from the expert. Nowadays most 'professionals' are employed by organisations, for example the professional operational researcher, the professional academic, the professional system analyst, who do not need the same level of protection, indeed it is often the organisation that has more power than the expert. It is from the exercise of power that ethical dilemmas arise and it is to the source of the power of the operational researchers that we should look to find an answer to the ethical questions raised for operational researchers.

Issues Generated

During the discussion following the presentations a number of general questions were raised that serve to create an agenda for future work.

In particular:

1. Do different categories of ethical issues arise in O.R. and consultancy which require different types of analysis?
2. How to establish to whom an individual consultant or analyst has ultimate responsibility as this seemed to be central to many of the other specific issues?
3. Should advocacy O.R. be seen as a legitimate activity or should objectivity be sought at all times?
4. What is the unit of analysis to use in studying ethical issues – the individual, the organisational or the societal, and how do they relate to each other?
5. How to encourage the self-reflection necessary to enable ethical issues to be considered by an individual?
6. What do practitioners generally perceive to be the most difficult areas in which to make ethical and professional judgements?
7. How to introduce ethical and professional concerns into the teaching of O.R.?

Biennial General Meeting

Following the meeting the Biennial General Meeting of the group was held where Ann Taket was elected as Chair for the next two years. Jim Bryant, John Friend, Paul Keys and George Mitchell were elected to the Committee for the same period of time.

By Paul Keys

<OR>

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As part of building a world class analytics team, our client seeks a talented achiever able to combine impressive academic credentials (to MSc or PhD level), 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, or C++, would be highly advantageous. Excellent social integration skills and genuine commercial acumen are essential. **Central London**

OPERATIONAL RESEARCHER
£27,000 - £35,000 Plus Benefits

Our client is a leading Business Services Group, providing expert Intelligence and Modelling consultancy services to Health, Social Care, Highways and Education Governmental departments. With expansion based upon continued success, they seek an OR Professional who is adept at analysing model data on a variety of platforms and providing actionable findings and recommendations. A keen desire to work with System Dynamics is required. **London, Dorset, Surrey. 12 month FTC+**

London, Dorset, Surrey. 12 month FTC+

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Excellent opportunity for a Senior Pricing Analyst whose demonstrable career has had an impact on the business in terms of influence on pricing & promotional strategies, optimising acquisition and retention performance, designing financial promotions and building robust pricing models whilst seeking & identifying opportunities to improve performance. Technically a strong skill set is required preferably including SAS and Excel. You will be commercially focussed, action orientated and keen to try new ideas. **Central London**

INNOVATION MANAGER-BIG DATA ANALYTICS
To £65,000 DOE + Bonus

Our client recognises the value of innovation and this role will be integral in developing the UK strategy for Big Data analytics. You will lead a small specialist team created to develop new and existing modelling approaches from predictive modelling to spatial analysis. You will make the best use of a range of techniques and tools that extract value from their sizeable structured and unstructured data sets. In addition, you will help to build the capability of the business to understand new tools as they explore the Big Data environment. **City of London**

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£Market Day Rates

Due to a significant increase in project work load our client has several openings for Contract Operational & Research Analysts from graduate 'entry' level through to experienced Team/Project Leader level. Applicants will need a good numerate degree (Maths, MORSE, Statistics or similar) and a demonstrable aptitude for, or proven experience in, reviewing scientific, technical or data analysis and drawing conclusions that will have a significant impact of business decisions. SPSS, R or similar required. **Hampshire (NW of Portsmouth)**

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Leaders in the UK Energy market, our client is seeking a talented data scientist to join their Analytics team. Working closely with internal colleagues you will be leading and prioritising value-adding insights and decision support tools. Successful applicants will be able to demonstrate solid academic achievement coupled with sound analytical experience using advanced tools such as SPSS, R and SAS with the ability to manipulate large data sets. **West Midlands**

West Midlands

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.