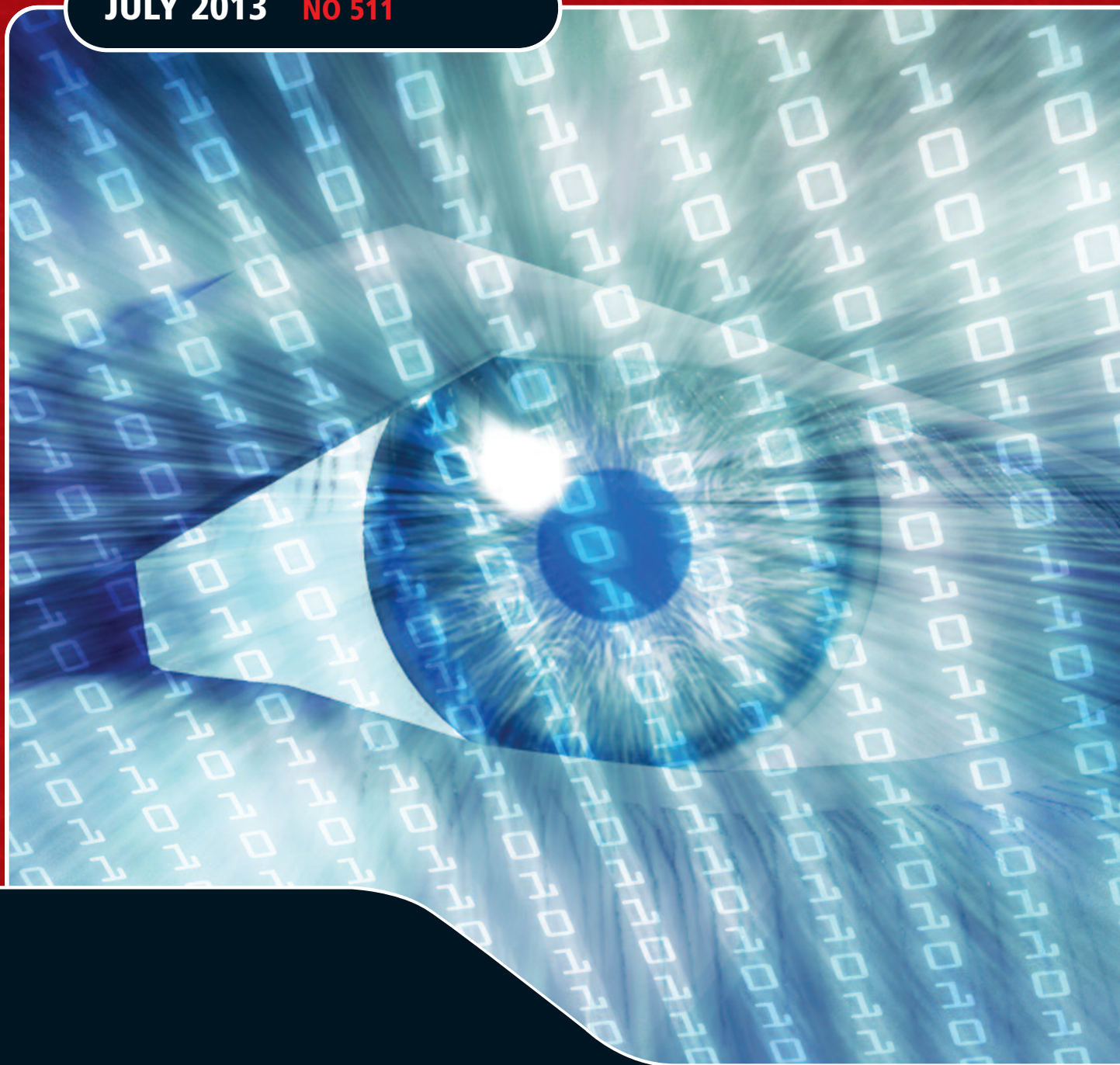


THE SCIENCE OF BETTER AT THE HEART OF ANALYTICS

INSIDE O.R.

JULY 2013 NO 511



BIG DATA – BIG BROTHER

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

THE FORECAST IS CLOUDY
DATA PROTECTION?
MASTERING ANALYTICS
YOGURT ANALYTICS



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EDITORIAL

JOHN CROCKER

Have you any ideas for subjects that would make for good debates?

If you have please contact Sanja Petrovic – for further information see this month's Leader. Talking of debates, Dr Cheng believes she has solved the long running rivalry between Devon and Cornwall on how to construct the perfect scone – do you put the [clotted] cream on the jam on the scone or the jam on the cream on the scone? And on the subject of food, you can find out what analytics has done for the Danone Company and their yogurts in another of Nigel's fascinating insights into Analytics and Big Data.

You may not have an idea for a debate but have you any problems looking for solutions or solutions looking for problems? If you have and think you can put together a poster and very short presentation please contact Jane Parkin – for more information see her article on the 'Making an Impact' stream also at this year's Conference.

Nigel was also at the recent KIM 2013 Conference on Knowledge and Information Management – the first of hopefully many more to follow. KMRP, the premier journal on Knowledge Management is celebrating its 'tin' anniversary (i.e. ten years) and Professor John Edwards, the founding editor was at the Conference to help with the celebrations. If you were there and need a reminder or, like me were unlucky enough to miss this event, and would like to find out more about what you missed, you will find Nigel's articles this month (and in subsequent issues) most informative. You can also read the last of his articles on YOR18.

Following on from an update on progress from the 'Is O.R. in UK universities fit for purpose' project, this month sees a similar article on 'Online Synchronous Learning'. Is this the way forward for short courses or is face-to-face teaching still the best approach. Last month we were able to read about a recent EMORG meeting, so not to be out-done, WORDS has provided an article on their latest meeting which was combined with IMA. On a somewhat grander scale, Ian Mitchell has kept us up-to-date on the goings-on of the Cornwallis Group with an article on their 18th annual get together.

Anna Curzon has provided us with an article about what is happening in Guinea. This sounds like a good opportunity for some O.R. activity. Why is a country with mineral and agricultural wealth still one of the poorest in Africa, and hence the world?

If you are quick, you may still be able to submit an abstract for inclusion in this year's conference (OR55) to be held at Exeter University in what must rate as one of the prettiest campuses in the country set within its very own botanical garden. While you are there, you might like to put Dr Cheng's theory to the test or take a few days out to explore what must be one of the earliest recorded examples of a travelling salesman problem (see June issue).

<OR>

FIFTH EUROPEAN CONFERENCE ON INTELLIGENT MANAGEMENT SYSTEMS IN OPERATIONS

SUNIL VADERA AND KHAIRY KOBACY

IMSIO5 3-4 July 2013 - There is still time to book to attend our IMSIO Conference in the Think Lab at the University of Salford!

Book and pay online at

www.theorsociety.com/IMSIO2013

We have an excellent Plenary speaker, Professor Qiang Shen who will open the conference with his talk on the 'Feature Selection in Intelligent Information Systems'. This will be followed by a Review Paper given by the Chairs of IMSIO, Sunil Vadera and Khairy

Kobacy, called 'A Review of AI applications in Operations: 2009-2013'. Various talks on topics of interest in Production/Manufacturing, Knowledge Structure/Supply Chains, Data Mining and Maintenance will then follow.

We look forward to seeing you there.

<OR>

EVALUATING EVALUATION: CORNWALLIS XVIII ANALYSIS FOR EVALUATION

IAN MITCHELL

This year's gathering took place at The Mason Inn, George Mason University in Fairfax, Virginia.



Professor Dave Davis introduces a current student project

The Cornwallis Group is the 'Canadian cousin' of the International Symposia of Military Operational Research (ISMOR). First held at Cornwallis Park in Nova Scotia, the Cornwallis Group seeks excellence in analysis, this year with a mix of 21 analysts, academics and diplomats from the UK, Canada and America. **Colonel (retired) Christopher Holshek** opened the single stream of one hour sessions on practice and theory considering analysis for evaluation.

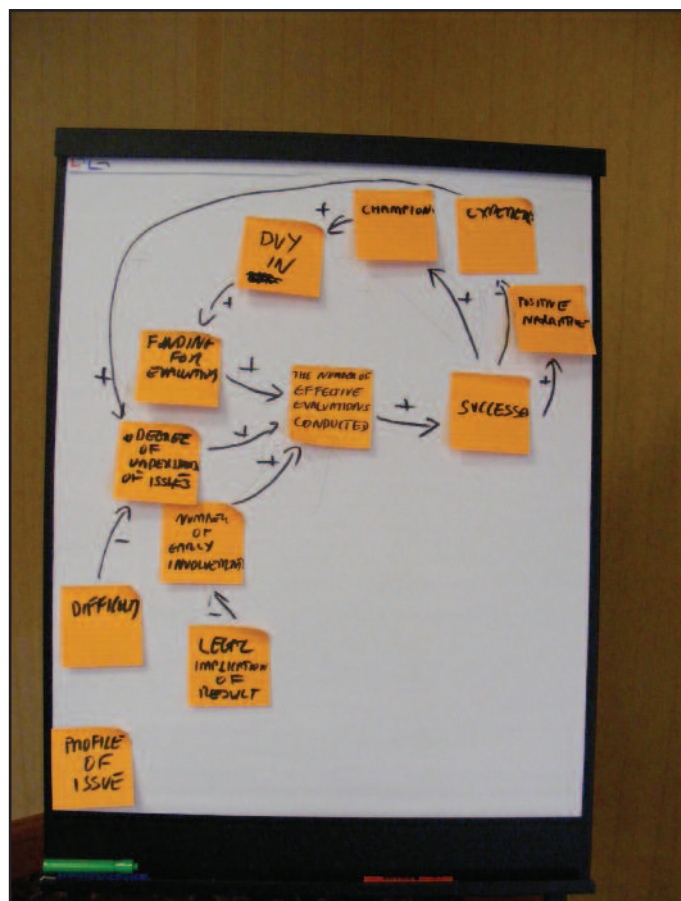
'Evaluation' is a loaded term. In conversation such terms have people talk past each other or reach furious accord, where they actually agree with one another but in slightly different terms over which they are busily fighting. In the UK policy world, 'evaluation' is retrospective analysis, looking back at how well a policy has worked, preferably in monetary terms. Appraisal in contrast happens before the policy goes into action and monitoring begins. Appraisal, Monitoring and Evaluation should feed into each other as part of the overall policy cycle where the evaluation informs appraisal of the next round of bright ideas for policy. In these terms much analysis called 'evaluation' is actually 'appraisal' - the fun bit before contact with reality occurs.

Sunday's golf showed practical evaluation in action, with the unique allocation methodology for the Random Trophy. The course had applied queuing theory and obliged all golfers to use golf carts, to maximise throughput. The carts offered a grand lap enhanced, rather than a good walk spoiled.

Small size is part of the Cornwallis Group design to encourage extended debate and discussion. Austerity limited the group to 21

participants, which felt to be just enough during the presentations. **Stan Coombes** asked whether there was **Analysis for Assessment or Assessment for Analysis** of UK Defence Engagement activities. **Dr Neil Verrall** explored **The Road less travelled Challenges to Strategic Cross Government Analysis, Evaluation and Assessment: A Case Study Approach**. Ultimately, evaluation addresses the questions; 'What has changed?' and 'Are things going in the right direction as planned?'.

Deborah Cheverton described **Learning from the past: Analysing history to support UK Defence policy**. Following on from Andrew Hossack at previous Cornwallis meetings Deborah presented analysis of history to support policy through mathematical, statistical and other forms of analysis to understand



Virtuous circles of evaluation - Causal Loops Diagram using post-its



Gene Visco and Dan Maxwell

historical engagements, operations, campaigns and conflicts. **Dan Maxwell** led a discussion group on **Value Focused Metrics**.

Arjun Madahar described **Strategic Balance of Investment** for the Strategic Defence and Security Review in 2010 using Mixed Integer Linear Programming. **Dr Allison Frendak-Blume's** case study **Evaluating an international academic program**, in the African Great Lakes area described the need for sufficient time to have effect as essential to a realistic evaluation; networks take time to mature. **Ian Mitchell** ran a **Systems Thinking Exercise** with post-its and Vensim software, identifying some virtuous circles supporting evaluation. **Dr Richard Hayes** explored **Measures of Merit in Complex Security Situations Insurgency, Terrorism and Nation Building**. The larger wicked problem eludes decision makers who are not thinking through the consequences of their decisions.

Dr Cynthia Irmer considered **Civilian security-a functional approach**; from fighting an enemy to protecting a people implies establishing law rather than making war. With examples spanning centuries **Gene Visco** discussed **Clausewitzian Friction on the modern battlefield**, including 'battlefields' for the **Non-Government Organisations**.

By webcam from her home **Lynne Genik** presented a **Systems Analysis of Community Resilience**, conducted for Emergency Management British Columbia. Workshops used Soft Systems Methodology to surface issues and create a holistic risk management framework for resiliency against three key hazards identified; flooding, wildfire and rockslides.

Mufeeza Iqba, Dan Archibald, Natalia Slain reported on the **Kenyan elections, with Mercy Corps as an organization Measuring success in complex operations**. The aim was to address 'How do you tell that you are making a positive difference?' in terms of objectives, goals and actions. Wordles can help suggest key terms, but full answers emerge through interactions with the analysts. The machines have yet to displace people.

With the title **Valued Focused Metrics for the Rule of Law – Establishing the Rule of Law in Post Conflict Nations Through the use of a Value Focused Model**, **Ms Jordan Becker** described eliciting an individual's point of view to identify strategic objectives. **Sasha Kishinchand** addressed **Behaviour as a basis of evidence: The role of perceptions and reactions as the center of gravity for analysis**. Despite many assessment indicators there is little measuring of outcomes or impact. **Duncan Feveyear** discussed **Developing a compelling story for Maritime Acquisition**, engaging stakeholders in appraise potential new mine counter measure vessels using risk assessment.

Margaret Daly Hayes PhD suggested that the new C2 is Co-ordinate and collaborate rather than Command and Control, in her **Latin American Lessons noted in peace operations and disaster response: Towards a framework for regional collaboration, based on** experience of response in January 2010 to a catastrophic earthquake.

The traditional Cornwallis **Roundtable** followed updates from **The Military Conflict Institute (TMCI)** and for **30 ISMOR** to run 29 July to 2 August 2013 at Royal Holloway.

Key points were:

- Having both young and grey (young at heart) participants broadens the perspectives of both through the presentation and discussion of the diverse forms of work.
- Meeting at Cornwallis gives access.
- Despite the austerity that depressed numbers to 21 attending from the 30-40 seen previously, the meeting was effective. Cyber links have improved and helped.
- The most engaging sessions had rolling question and answer, which the smaller sized group helped.
- The hour long session is the key aspect of Cornwallis.
- In the current and near future, prioritisation will be a near universal theme for analysts.
- Similar problems exist for evaluations everywhere which are not strictly technical problems: Continuity of sponsorship is the key for good evaluation enabling investment and sustained effort.

The original Cornwallis theme was 'Analytic approaches to the study of future conflict'. Both British and Americans will be out of Afghanistan so in a year's time and defence ministries will be focused on other things. To succeed Cornwallis needs to cover those: perhaps Syria, contingencies and analysis across government with new tools and techniques and data.

The Cornwallis Group recorded a vote of thanks to **Professor Dave Davis**, the Founding and Program Chair as he handed over to Tony Hopkin to close the 18th meeting of the Cornwallis Group. The proceedings of the 18 meetings offer a unique resource on analysis and are on the Cornwallis group website: www.thecornwallisgroup.org

'GREAT AND GOOD' INTERVIEWS FOR THE ARCHIVE

MARTIN KUNC WARWICK BUSINESS SCHOOL

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

Mike Wright wrote an article about the Society's Archive and Library in April 2013. The Archive is held at the Modern Records Centre located in the University of Warwick. While Mike talked about reports from industrial O.R. groups and other institutions, he didn't refer in detail to an important source of our memory: interviews with O.R. pioneers – The Great and Good – and related information, e.g. personal recollections.

No doubt some of this material was employed to write the book 'Operational Research in War and Peace – The British Experience from the 1930s to 1970' by Maurice W Kirby but there is more material that may be of interest. This includes interviews with H.M. Barkla, H.G. Jones, S. Vajda, R. Ward, W. Watkins, R.R.P. Jackson, E.K.G. James, M. Shutler, R.H. Colcutt, M. Kinnaird-Allan, B.H.P. Rivett, Lord Halsbury, Professor Sir Hermann Bondi, D.A. Quarmby,

B. Haley and J. Stringer. Some of these interviews were confidential so they are not publicly available.

Maurice Kirby mentioned in his book published some ten years ago that a second volume might be under development. While we wait for the second volume, it would be a good idea to complete the memory of the 'Great and Good' people in O.R. through additional interviews with relevant people in our field. Therefore, I invite you to complete the following survey (https://wbs.qualtrics.com/SE/?SID=SV_2oEgRhucyQOYxGB), where you can suggest names to be included in the list of people to interview. Given the advance of technology, we may consider including videos in the archives. Please, contact me (martin.kunc@wbs.ac.uk) if you have suggestions or require an example of previous interviews.

<OR>

WORDS/IMA MEETING

JOHN CROCKER

The joint meeting scheduled for 23rd January between WORDS and IMA finally took place on Tuesday 21st May. The speaker had been unable to get to the meeting in January due to being snowed in.

The talk was in two parts: the first part described some of the complexities associated with trying to optimise the number of spares required to maintain high levels of availability of fleets of aircraft. These were such that it was not practical to use Poisson and Sherbrooke's marginal estimated back orders method; instead an approach using genetic algorithms with simulation was favoured. It was noted, however, that under certain circumstances—this approach could result in an unsatisfactory recommendation. In particular when the model under-predicted the number of failures of expensive parts and over-predicted the numbers for cheap[er] parts, the optimisation was likely to exaggerate this difference with the result that there was likely to be too few spares of the former and too many of the latter.

This sort of led onto the second part which was a discussion about incorrect use of statistics, in particular, when dealing with 'big data'. Three examples were given to get the debate going. The first was where an analysis of the names of the winners of the last 176 Grand National races had been used to predict the winner of this year's National. The second had come to the conclusion that there was a relationship between hair loss and migraine based on an analysis of a large sample of data from a medical database. The third was a social science study which had resulted in using a regression model with 103 independent variables. Whilst it was recognised that the first was probably not intended to be taken too seriously (and, as it happens, it was not very successful), the speaker suggested there might be cause for concern with the other two. Was the data used

unbiased and truly representative? Could the relationship be coincidental? In the third example, 34 binary variables (ones which can take the value 0 or 1) would be sufficient to uniquely identify everyone on the planet. This suggests that at least 69 of the 103 variables were superfluous.

Whilst peer review of research papers should provide a safeguard against mis-use of data or method, there was some concern that same might be the case data analysis done for commercial reasons. It was generally accepted that anyone who had undertaken a recognised course in statistics in this country, at least, would be made aware of the limitations and safeguards, but there was a danger that business/commercial pressures may override such considerations. It was also mentioned that managers had a certain level of responsibility for ensuring this did not happen. Unfortunately, the current trend seems to be to employ 'professional' managers who are quite likely to have no knowledge or understanding of what their staff are doing. The notion of a professional analyst was raised as a possible solution but no consensus was reached.

No doubt this is not the end of the debate. If you have any suggestions as to what role the OR Society should take or how such problems can be avoided, please write to the editor or send me an email (John.Crocker@O-Sys.com).

<OR>

CAREERS OPEN DAY 2013

LOUISE ORPIN EDUCATION OFFICER

The Careers Open Day will be held in a new location back in Birmingham for 2013.

Who's already attending...



GOVERNMENT OPERATIONAL RESEARCH SERVICE



Take a stand at this year's Careers Open Day. Raise your profile with undergraduate and postgraduate students interested in careers in O.R. and analytics.

- Recruit graduates into O.R. and analytical based roles.
- Promote O.R. and analytical Master's courses.

In addition to the Careers Exhibition, the event includes a programme of informal presentations where graduates can listen to practitioners' first hand experiences of life working in O.R. This is an ideal opportunity for exhibitors to further promote themselves with the students.

This year's programme of talks will be repeated and the students split into two groups to ensure a constant flow of students around the exhibition while also allowing the students to benefit from the talks on offer.

The Open Day will be held at the Thinktank in Birmingham on Wednesday 20 November 2013, from 10:00 to 16:00.

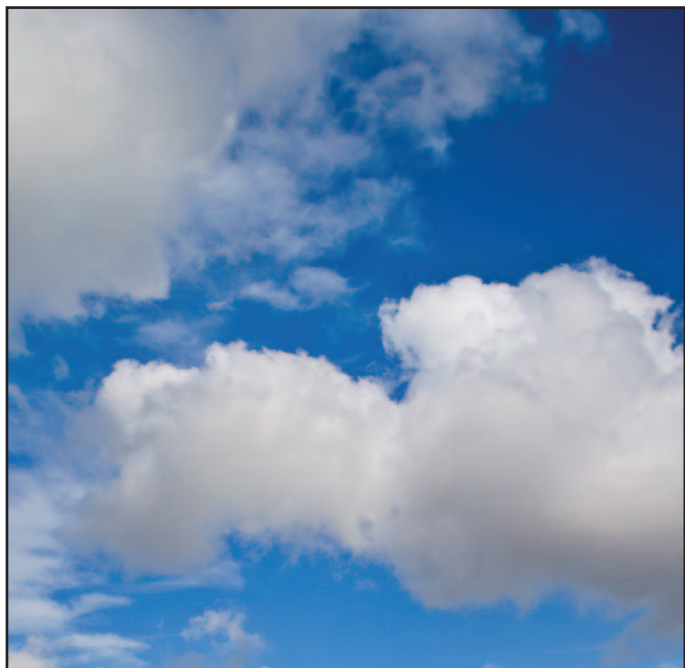
Reserve a stand by 31 August 2013 for £280 + VAT (£320 + VAT thereafter).

To reserve a stand or for more information please email Louise Orpin, louise.orpin@theorsociety.com

THE FORECAST IS CLOUDY

DAVID STURGES

Chief Commercial Officer at hosted desktop company, WorkPlaceLive www.workplacelive.com, discusses what kinds of technology small firms are embracing to expand their businesses.



Small companies need to be able to act like larger companies to compete in a highly competitive marketplace. Increasingly, companies are embracing technologies such as cloud computing, VOIP, Skype and video conferencing to improve their responsiveness, support their consultants working remotely and expand their businesses.

Using a hosted desktop, consultants can access all their files and databases on the move. This means they can respond quickly to clients. It also means they can work more productively while on a train for instance. It also allows a flexible and remote workforce to function from any location, improving workforce productivity and effectiveness, as well as negating the need for big offices, which can save money.

If a company outsources all data and IT systems to a managed service provider they will not need any servers in the office or have to manage any software licensing or administration issues. This could save them time and money. The latest software and security will also be provided and having 'corporate grade' IT at an affordable price could aid new business development and growth.

One company that has adopted a hosted desktop service to expand internationally is Oasis HR, www.oasishr.com, a fast growing, HR recruitment agency that has successfully developed its business

using a partnership model. The company realised the most logical progression would be to move away from a local IT server supported by an external provider and adopt a cloud-based, hosted model instead.

This approach supported the organisation's international expansion plans and enabled it to offer employees flexible working arrangements. Today, its consultants around the world are all using the same IT systems and working just as effectively when they are out of the office as when they are in.

Voice-over-Internet Protocol (VoIP) allows people to make telephone calls using a computer network over the internet and video conferencing. This can support expansion, especially overseas and can save companies money on phone calls, as well as reducing the need for face to face meetings.

Increasingly, hosted desktops are allowing businesses to connect all the office packages they may need. This will give those working at home the same capability as if they were in the office. This will allow small companies to expand rapidly without having to increase their floor-space. It will also allow them to access a wider talent pool (including those, who for whatever reason, prefer not to commute to work).

In the future it will become more commonplace and easier for employees to use multiple devices for work and ensure data security. Using a hosted desktop provider means that data is securely stored at the data-centre of the provider so is available to everyone and will not be lost if hardware is lost or stolen.

The future will see improved connectivity and interoperability between software packages and clouds. Joined up thinking and joined up systems will make working life much simpler. Those that embrace the cloud are much more likely to remain competitive.

There is however a note of caution. Data held on clouds may be lost if the cloud provider goes out of business or if the authorities believe it contains illicit material. At the moment, it would appear that anyone who puts data on a cloud forfeits their copyright to that data. It is a wise precaution to make sure all data is regularly (and frequently) backed-up to an independent device.

ECONOMIC BENEFITS OF MATHEMATICAL SCIENCES

JOHN CROCKER

This article is based on the final report produced by Deloitte in November 2012 entitled 'Measuring the Economic Benefits of Mathematical Science Research in the UK', commissioned by EPSRC.

According to the report, there are some 2.8 million people employed in mathematical science occupations (MSO) in the UK (c 10% of jobs) who, between them, generate £208bn (c16%) or around £74K per head, a little over twice the national average. Not surprisingly, the main contributors are banking & finance £27bn, computer services £19bn, pharmaceuticals £16bn, construction £13bn and public admin & defence £12bn.

Qualitatively, mathematical science achieves these benefits by: building the **information infrastructure**; supplying **tools and techniques** to analyse and interpret data; providing a **public good** (e.g. modelling disasters and test drugs); contributing to **national security** (via advanced data security, etc); creating robust **forecasts** to address uncertainty and allow for better planning and; optimising processes to increase **efficiency**.

Ironically, there is no agreed definition of Mathematical Science Research (MSR) or indeed, mathematics. The definition used does include operational research as well as probability and statistics. Given this fairly loose definition, the one for MSO is similarly vague and is given as those occupations which either entail MSR or which directly require the usage of MSR-derived tools and techniques.

It has been recognised that many mathematical techniques date back, sometimes, many centuries even though the tools upon which they are based could be quite new. There is often a considerable lag between the original research and any 'useful' applications. Unlike the other STEM subjects, research in mathematics does not negate previous knowledge, it adds to it. A mathematical theorem remains true and a counterexample remains false forever. Mathematics under-pins almost every aspect of modern living and for the most part is taken for granted. Cashiers who use barcode readers, drivers who use satnavs, all of us who use PINs or mobile phones or require CAT, PET or MRI scans are dependent on mathematics but we do so

almost totally oblivious of the fact.

Mathematics pervades almost every aspect of modern life so it is particularly difficult to quantify the impact that MSR has, is and will make on gross value added (GVA). 'Mathematical science research is carried out which ... can lead to new tools and techniques being developed and applied that ... eventually can have an economy wide impact as these tools and techniques become commonplace.' The sentence is split into three parts to show how MSR is at the centre that has direct and indirect impacts. The study did not attempt to quantify the indirect or broader effects of MSR but has attempted to cover these qualitatively.

The implications of this report are that MSR and MSO punch way above their weight and, as such, are an essential area of activity for the future of the British economy. Unfortunately, investing in MSR could be regarded as something of an act of faith, probably even more so than for the other three STEM subjects. High level mathematics is also notoriously difficult to understand – very often there will only be a handful of people with the necessary knowledge to check the validity of a proof or peer-review a paper. Mathematics is a truly pure subject in so far as it can, and very often is pursued for its own sake. If the research leads to a practical application, it is often purely coincidental, and many mathematicians would add, 'unfortunate'.

Mathematicians are their own worst enemy in this respect so it is very much to be hoped that this report will encourage the current and future Governments and the Research Councils to invest in mathematical research without placing undue demands on the results of that research.

<OR>

WHERE ARE THEY NOW?

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

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

William England

Manchester

<OR>



ONLINE SYNCHRONOUS TEACHING

MARTIN SERPELL AND JOHN CROCKER

A couple of years' ago I 'attended' a course where I sat at my desk and listened to the lecturer over the phone but could see the material being presented on my laptop.

In various other parts of the organisation, others were likewise engaged on the same course. One could 'raise one's hand' by clicking a button. One could also ask and answer questions in such a way that the lecturer could control who of the other participants could see your responses and when. Unfortunately, the course was not very interesting and was far too long to sit with a phone pressed hard against one's ear to a) try to hear the lecturer and b) to try to cut out all the noise that pervades the open plan office.

Despite the difficulties, the concept seemed to have potential. With such a method of presentation, the number of attendees is virtually limitless, they can be in any part of the world and they can sit at their desk either in the office or at home. Martin Serpell and I put the suggestion to investigate this technology to the Board who approved it as one of the charitable research projects for 2012.

The first stage of the project has revealed that there has been a considerable amount of research done in the area of methods of presenting lectures and courses. As far back as the 1950's I can recall the children in the Outback of Australia using ham radio for their lessons. When the OU started, most of the lectures were pre-recorded and presented on BBC2 (usually at rather unsociable hours). Computer games have also been used often in the form of simulations in which students take on various roles and attempt to

solve various problems which occur as events unroll.

It has been noted that there are numerous lectures available on various websites (e.g. IFORS) which cover most aspects of O.R. and are free. Although these are useful, they do lack any interface between student and lecturer or, in many cases, feedback.

It would appear from the literature that the general consensus is that students perform just as well when taught via an online synchronous approach as they do in the conventional face-to-face approach. There are, however, a number of caveats to this. The literature recognises that not all subjects can be taught in this way and that extra care is needed when putting lectures together. The indication is that it is not sufficient to take a face-to-face lecture and present it online. It has also been suggested that when preparing these lectures it is a good idea to keep each part relatively short – possibly as short as 30 min per session.

In the second phase, Martin will be signing up for a number of online courses to gain some practical experience. We will then, with any help we can get, use this to help us put together a short course which we hope to test out on some volunteers in the autumn.

<OR>

ASSISTED PLACES: OR55, EXETER

GAVIN BLACKETT SECRETARY & GENERAL MANAGER

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

Even though the Society aims only to break even in running the Conference, the price of registration and accommodation taken together with travel costs can soon mount up. Practitioners from larger organisations tend to get conference places paid for by their employers, whilst many academics have conference budgets to cover their attendance at events such as this. There are, however, a number of potential attendees for whom the conference costs can represent a significant barrier.

These potential attendees would not only benefit personally from attendance, but the conference itself and the wider O.R. community could gain value. This is where the Society's Assisted Places Scheme comes in.

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

Applicants are invited to submit a proposal for funding via email to Gavin Blackett, (gavin.blackett@theorsociety.com) before the deadline of 28 June 2013. Successful candidates will be informed of the awards in July.

<OR>



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

The President's Medal is one of The OR Society's most prestigious awards and we're inviting entries for the 2013 competition.

The President's Medal is awarded for the best **practical application of O.R.** submitted to the competition (a wide definition of O.R. is used). Entries are welcomed from both industry based O.R. workers and consultants as well as from academics. One of the main qualifications for entry is that the work has been implemented before submission. If you're thinking of giving a **case study based paper at OR55**, why not consider aiming a bit higher and going for the President's Medal?

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

Entry couldn't be simpler! You need only to provide a short summary of the work, concentrating on the criteria listed above and listing the team members. It is important that you submit with your entry an endorsement by the client of your work. Entries will be short listed and those selected will be invited to present their work at the OR55 conference in September 2013 which will be held at the University of Exeter.

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

RECENT PRESIDENT'S MEDAL WINNERS

2006 – A Swain, A Ross, British Airways: Improving British Airways' short haul punctuality performance
 2007 – T Lewins, M Sykes PA Consulting; A Moon Nissan UK: Developing a production-schedule tool
 2008 – I Wright, DWP: Optimising the Department of Works and Pensions' estate
 2010 – Panos Frangos, Simon Hughes, Sellafield Limited: A model future for the UK's nuclear legacy
 2011 – Stephen Hammond, Keith Slater, NATS: Air Traffic Control, Business Regular and CO2 Emissions
 2012 – Colin Marston, Patrick Rose, Dstl: Shaping the NATO Plan for Afghanistan

*Entries by e-mail to the Secretary and General Manager,
 The OR Society, gavin.blackett@theorsociety.com by 30 June 2013*

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

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

THE HUMOR COLUMN

GAVIN BLACKETT SECRETARY & GENERAL MANAGER

A woman was sitting at a bar enjoying an after work cocktail with her girlfriends when a tall, exceptionally handsome, extremely sexy, middle-aged man entered. He was so striking that the woman could not take her eyes off him.



This seasoned yet playful heartthrob noticed her overly attentive stare and walked directly toward her. Before she could offer her apologies for staring so rudely, he leaned over and whispered to her, 'I'll do anything, absolutely anything, that you want me to do, no matter how kinky, for £20...on one condition...'

Flabbergasted but intrigued, the woman asked what the condition was. The man replied, 'You have to tell me what you want me to do in just three words.'

The woman considered his proposition for a moment, and then slowly removed a £20 note from her purse, which she pressed into the man's hand along with her address.

She looked deeply and passionately into his eyes, barely concealing her anticipation and excitement, and slowly and meaningfully said....'Decorate my house.'

A somewhat naïve woman from the country moves to the big city, and like many before her, finds herself a little lonely. She decides a pet would be a good idea for a little company in the evenings after work, so she heads off to her local pet shop.

As she's wandering around the shop, she notices a box full of frogs. The sign says: 'SEX FROGS Only £20 each! Comes with complete instructions'.

The woman excitedly looks around to see if anybody's watching her. She whispers softly to the man behind the counter, 'I'll take one!'

As the man packages the frog, he quietly says to her, 'Just follow the instructions.' She nods, grabs the box, and is quickly on her way home.

As soon as she closes the door to her apartment, she opens the instructions and reads them very carefully.

She does EXACTLY what is specified:

1. Take a shower.
2. Splash on some nice perfume.
3. Slip into a very sexy nightie.
4. Climb into bed, place the frog down beside you, and allow the frog to do what he has been trained to do.

She then quickly gets into bed with the frog and to her surprise . . . NOTHING happens! Naturally, the woman is very disappointed and quite upset at this point. She re-reads the instructions and notices at the bottom of the paper it says, 'If you have any problems or questions, please call the pet shop.' So, she calls the pet shop.

The man says, 'I'll be right over', and within minutes, he's knocking at the front door.

The woman welcomes him in and says, 'See, I've done everything according to the instructions. The damn frog just sits there!'

The man, looking very concerned, picks up the frog, stares directly into its eyes and says sternly, 'LISTEN TO ME!! I'm only going to show you how to do this ONE MORE TIME!!!'

LATEST NEWS OF OR55 - ANNUAL CONFERENCE

3-5 September 2013 Exeter University

Title and Abstract submission deadlines are fast approaching so please submit your Title and Abstract online now! We have 25 great streams and are doing well for papers but we still need more submissions from you. Please go to our website at www.theorsociety.com/OR55 and submit! We look forward to hearing from you.

Practitioners' Day

In addition to plenary and stream presentations, on Wednesday 4 September, OR55 will feature a great one-day Practitioners' event titled 'Making an Impact: In Practice'.

'Is it your day-job to help make organisations more effective – through analytics, decision support, business analysis, management science, operational research, or just plain problem-solving common sense?

If so, whatever your job title, whether you are an external consultant or an employee, 'Making an Impact' is for you.

At 'Making an Impact' you can

- See case studies showcasing important applications
- Exchange ideas and expertise with people in similar fields
- Explore issues of immediate relevance to practice
- Try out new techniques – are they any good for you?
- Meet leading academics and discover what they can do for you – and what you can do for them
- Build your network amongst likeminded professionals'

President's Medal Awards

On Wednesday afternoon, we have the OR Society's prestigious President's Medal awards for the best **practical application of O.R.** submitted to the competition (a wide definition of O.R. is used). Entries are welcomed from both industry based O.R. workers and consultants as well as from academics. The deadline for submission is 30 June 2013 by email to: gavin.blackett@theorsociety.com. Go to our website and search for Awards for more information and criteria.

Social Programme

OR Society conferences are also noted for the traditional Bar Quiz which will be taking place and, of course, for the all-inclusive excursions. This year there's a choice of visiting the Yearstone Vineyard, A La Ronde, Finch Foundry and, hopefully, a walking tour of Exeter for the more energetic!

Yearstone vineyard is located on a hillside above the lower valley of the river Exe at the picturesque village of Bickleigh in mid Devon. The vineyard was started in 1976 by pioneering English viticulturist Gillian Pearkes. She planted many different wine varieties collected on her worldwide travels and experimented with wine growing techniques for the English climate. The vineyard had an international reputation thanks to Gillian's pioneering efforts.

A La Ronde is a Quirky 18th-century house with fascinating interior decoration and collections. This unique sixteen-sided house was described by Lucinda Lambton as having 'a magical strangeness that one might dream of only as a child'. Built for two spinster cousins, Jane and Mary Parminster, on their return from a grand tour of Europe, it contains many objects and mementoes of their travels. The extraordinary interior decoration includes a feather frieze, gathered from native game birds and chickens, laboriously stuck down with isinglass.



A La Ronde

Finch Foundry is the last working water-powered forge in England. Set amid beautiful Dartmoor countryside in the village of Sticklepath, this last remaining water-powered forge in England gives a unique insight into village life in the 19th century. In its heyday the foundry made 400 tools a day, including sickles, scythes and shovels for West Country farmers and miners.



Finch Foundry

Walking tour of Exeter – there are a number of options for this which we have yet to decide on and so keep an eye on our website for information on this and our other social journeys.

BOOK NOW!

Book by 30 June to make sure you don't miss out on our early booking rate and join us for a brilliant three days in Exeter! www.theorsociety.com/Pages/Conferences/OR55/OR55BookInfo.aspx

For more details of OR55, to submit a Title and Abstract and to book online, visit www.theorsociety.com/OR55

SIMULATION WORKSHOP

THE OR SOCIETY'S 7TH SIMULATION WORKSHOP (SW14)

HELD IN COOPERATION WITH: THE INFORMS SIMULATION SOCIETY AND THE SOCIETY FOR MODELING AND SIMULATION INTERNATIONAL (SCS). 1-2 APRIL 2014, WORCESTERSHIRE, UNITED KINGDOM

The biennial OR Society Simulation Workshop brings together practitioners and academics working in the field of discrete-event simulation and related fields. It provides an opportunity to exchange ideas on the current and future state-of-the-art in simulation and modelling. The programme consists of a key note presentation, panel discussion and parallel streams. Breaks between sessions and the conference dinner provide an excellent opportunity for networking. The exhibition area includes poster display and some of the latest developments in simulation software tools.

Location

The Abbey Hotel Golf and Country Club is situated in Worcestershire on a lovely 175-acre estate that once belonged to the now ruined local abbey. It provides an excellent standard of accommodation and conference venue. There are also leisure facilities and a championship standard Golf Course.



Abbey Hotel

The hotel is near to Birmingham, which has excellent links through the International Airport and railway services. London is only 1.5 hours away.



Stratford-upon-Avon

Local attractions include Stratford-upon-Avon (Shakespeare's birthplace) and Warwick's Medieval Castle.

The Programme

The workshop will include plenary sessions, special focus streams, simulation practice sessions and posters. Contributions to the technical programme are sought in the following areas, although papers in any area of simulation modelling and analysis will be considered.

Simulation Modelling Methodology

- Component based simulation
- Collaboration methods
- Distributed simulation
- Web based simulation
- Simulation and the grid
- Simulation and artificial intelligence
- Simulation visualisation
- Simulation software

- Simulation standards
- Human performance modelling
- Agent-based simulation
- Service-oriented simulation
- Conceptual modelling
- Verification and Validation

Simulation Analysis Methodology

- Design and analysis of simulation experiments
- Simulation optimisation
- Risk Analysis
- Metamodelling

Simulation in Practice

- Simulation in manufacturing
- Simulation in services
- Simulation in defence
- Simulation in healthcare
- Simulation in semiconductor industry
- Simulation practice
- Simulation education
- Energy modelling
- Environmental simulation
- Supply chain and transportation modelling

All submissions will be peer reviewed. Accepted papers will be published in the conference proceedings and will be presented at the conference. Presentations will be given 30 minutes including time for questions and answers.

The **Simulation Practice Stream** provides an opportunity to submit a shorter paper (3 to 5 pages). These papers should either describe a novel application of simulation or provide some insight into how the use of simulation might be improved. Contributions from simulation practitioners are particularly encouraged.

Posters of applied or research projects in simulation will be displayed during the conference. A poster session is provided where delegates have 1 minute to briefly introduce their work.

Timetable and Deadlines

1 November 2013: Submit electronically contributed papers not previously published or presented. Submission instructions will be found soon at www.theorsociety.com/SW14. Each submission must be a 4-10 page paper (3-5 pages for the Simulation in Practice Stream), including an abstract of less than 150 words.

Submission implies that an author will attend the workshop to present the paper, and all clearance required for publication of the paper will be obtained by 14 February, 2014.

10 January 2014: Contributors will be notified whether or not their paper has been accepted.

14 February 2014: Authors provide the final manuscript for inclusion in the conference proceedings. These should be in the format required for the conference. Author instructions will be available soon at www.theorsociety.com (in the conferences section).

14 February 2014: Submit poster title and abstract of 150 words. These should be submitted using the electronic submission form for full contributed papers. Submission implies that an author will register to the conference. Posters abstracts will be published in the conference proceedings and should follow the guidelines for conference papers.

If you require any further information on paper or poster submission, please contact the programme or poster chairs: Dr Stephan Onggo and Dr Cathal Heavey (Programme) or Dr Thomas Monks (Posters).

Conference Fees

Conference fees include attendance at all conference sessions, lunches, mid-session teas and coffees and a copy of the conference proceedings. Accommodation and breakfast are not included.

Student registration fees are for student members of the OR Society.

	Early registration (up to 31 January 2014)		Registration (after 31 January 2014)	
	Excl VAT	Inc. VAT	Excl VAT	Inc. VAT
Members	£300	£360	£350	£420
Non-members	£370	£444	£420	£504
Students	£140	£168	£140	£168

(Members of associated Societies ACM SIGSIM; INFORMS and SCS qualify for member's rate)

Single Occupancy Ensuite Accommodation fees for a delegate are £80.00 + VAT per night and includes evening meals. Double Occupancy Ensuite Accommodation fees will be £100 + VAT per night. For full information please go to

www.theorsociety.com/SW14.

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Durham University
Lanner Group
Systems Navigator
FOI - Swedish Defence Research Agency

IF AT FIRST...

NIGEL CUMMINGS

Dr. Amanda Gregory, Director of Learning and Teaching, University of Hull Business School gave her plenary session at YOR18 on the topic of continuous improvement.



Dr Amanda Gregory

Continuous Improvement, a term much promoted in the business press, is the propensity of an organisation to constantly pursue enhancements in its processes, products and services for the benefit of all its stakeholders.

Historically continuous improvement can be traced back to William Edwards Deming's work which gave rise to Lean Manufacturing effort and the notion of 'kaizen'. More recently, the concept has found expression through the Lean Systems Thinking approach which has been widely embraced by the public sector in the UK.

Her presentation began with a history lesson about the beginnings of continuous improvement. The roots she said dated back to the 1800s when companies like National Cash Registers were creating employee driven improvement schemes at the employee level. So the early origins of continuous improvement were actually quite engaging, quite systemic and quite holistic. But then in the 1900s

something quite significant happened, the focus changed from the individual level to focus on task and process improvement. The early work for example of F.W. Taylor on scientific management looked less at how one person performs a task but more on how to create a process that any person can perform. So it is a kind of a disempowering process because the employee becomes a cog in a machine.

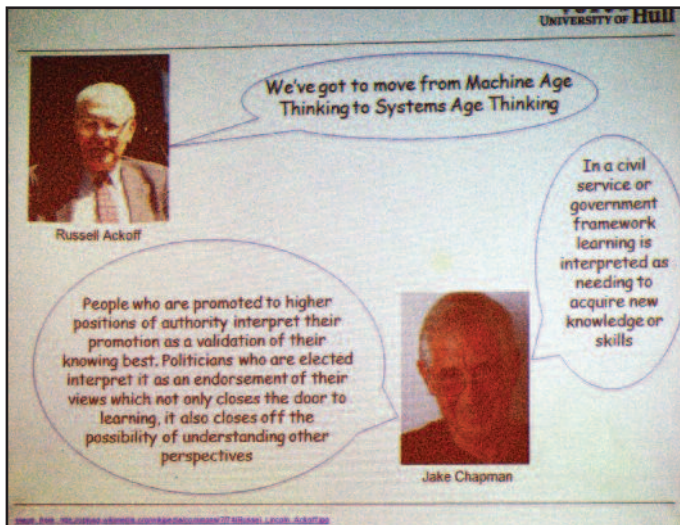
This became the Training Within Industry Programme during the Second World War in the US. After the Second World War that logic was transferred to Japan, who took it on and made it their own. In the US, Motorola produced 'Six Sigma' that looked at process variation and statistical control measures.

The latest development is a hybrid methodology like Lean Six Sigma. Up to now the emphasis has been on business and industry. If you are a systems thinker it is all about where you define your boundaries, what is inside the boundaries and what is outside the boundaries. I want to look at continuous improvement in the public sector and I want to look at some of the systems approaches to continuous improvement'.

The performance of any system is a function of the relationships within them. It was not the individual players in the system it was how they worked together in a team environment. One needs to relinquish the 'mechanistic reductionist mind set' and think in terms of 'complex adaptive systems'.

Complex adaptive systems are quite different to machine age thinking. There are many component parts and complex relationships between those parts that are highly connected. There is feedback between the component parts in such systems which creates non-linear behaviour that is both difficult to understand and predict.

Dr Gregory also spoke about the work of Russell Ackoff, an American organisational theorist who'd been telling the world since the 1960s, that man must move from machine age thinking to systems age thinking. In 1972 Ackoff wrote a book with Frederick Edmund Emery about purposeful systems, which focused on the question of how systems thinking relates to human behaviour. 'Individual systems are purposive', they said, 'knowledge and



understanding of their aims can only be gained by taking into account the mechanisms of social, cultural, and psychological systems'.

She also spoke about the work of Jake Chapman, the author of 'Introducing Systems Thinking' and 'Systems Failure – Why Governments must learn to think differently'. These works inferred that the current model of public policy-making was no longer right for a government that had set itself the challenge of delivery. Improvements as such were usually driven by central policy initiatives which assumed a direct relationship between action and outcome - but such assumption was false.

Jake Chapman had done extensive research into governments who made energetic attempts to force change from the centre, but he found that such measures were in fact counter-productive. His alternative view was that government should be based on continuous learning. A view which has become increasingly important as the impact of communication technology and other accelerating social trends offers numerous moving targets for public service reformers.

In Chapman's view public services were complex adaptive systems which were subject to the law of unintended consequences, so intervention could make problems worse. That is why the carrot-and-stick approach to reform which links increased funding to tougher performance targets inevitably fails in the long run.

Another leader in this field is Dr Peter Checkland, whose Soft Systems Methodology provides a systemic approach for tackling real-world problematic situations. This was the result of the continuing research that Peter Checkland, Brian Wilson, and many others have conducted over more than 30 years, their body of work now provides a framework for users to deal with the kind of messy problem situations that lack a formal problem definition.

The Vanguard Method created by 'management guru', John Seddon, a British occupational psychologist and author, specialising in the service industry was she said a lean systems approach based on the simple processes of check, plan and do. The first stage, 'check', was where identification took place of high-volume, high-value processes and high volume, high-value demands that were based on a system. The next step would be to complete a capability chart where it would be possible to see where, how and when variation occurred in the organisation as is strived to meet its demands. This approach could offer insight into what variation in activities and processes were taking place in a high complexity system. The next step would be to take the demands and 'walk through them' process by process and create a process map. Once verified, it could be used to work out what activities 'added value' and which did not.

Finally, Dr Gregory spoke about the process of variety engineering. Management uses strategies to magnify its variety. Strategies are also used to attenuate the variety of high complexity systems. So what we are trying to do is to bring them into a state of equilibrium. We use these processes of variety engineering all of the time. Delivering a talk is engaging in the process of variety engineering. The speaker is a low variety system and the audience is a massively complex high variety system consisting of individuals who interact in many different ways.

Dr Amanda Gregory had touched on many topics but the underlying theme of her presentation was all about thinking creatively, not taking things for granted and being prepared to challenge things within those organisations and systems with which we were involved.

<OR>

'In Chapman's view public services were complex adaptive systems which were subject to the law of unintended consequences, so intervention could make problems worse.'

DATA PROTECTION?

NIGEL CUMMINGS

Hani Okoroafor, University of Huddersfield Business School presented a paper at KIM 2013 which discussed the barriers to tacit knowledge sharing in franchise organisations.



Hani Okoroafor at KIM 2013

Hani Okoroafor's paper represented a considerable amount of knowledge management work that had taken place to identify the barriers that franchise organisations, in particular, face when sharing information. It details how contemporary knowledge generally points to five key barriers that obstruct franchisors and franchisees from leveraging tacit knowledge.

The five barriers are: Trust, Maturation, Communication, Competition and Culture. While these five categorisations are clear in their explanation, Hani's research and subsequent paper set out to explore the complex relationships these barriers possess, and to explore the complex relationships that often exist between franchisors and franchisees.

Collective knowledge can only become powerful if it is shared amongst those who possess common goals. The issue of common goals however provokes contention within franchises because many franchisees feel that the franchisor is autocratic and insensitive to the challenges posed to them staying in business. Franchise guidelines are often viewed with suspicion by potential franchisees.

Hani identified two types of franchise organisation – the traditional and network. He said that in traditional franchises there is an explicit delineation of roles between the franchisor and the franchisee; therefore knowledge is more likely to be created by the franchisor and disseminated to franchisees. In the case of network franchises though, these appear more to be guided by a flow of knowledge in all directions within the network.

Interestingly tacit knowledge can also be categorised in five distinct types too: concealed knowledge, ostensive knowledge, mismatched salencies, unrecognised knowledge and the final type concerns logistically demanding knowledge where physical proximity becomes especially important in knowledge transfer.

Hani said that both tacit and explicit knowledge can become part of the organisational capital of any company, and this also applied to any franchise community. Explicit knowledge could be shared by franchisors and franchisees through documentation such as training manuals but tacit knowledge was hard to capture and often difficult to store.

His paper also explained the differences between the ways that tacit knowledge was typically shared. The common theme was that language is not necessarily the primary mechanism for the process of [tacit] knowledge sharing.

There was also a danger that such knowledge could be used by one side to the detriment of the other. There can, therefore, be a reluctance to cooperate or to give too much away.

The study revealed that the long-term suggested any franchise organisation will generally be determined by its ability to leverage all its assets through a framework of franchise learning, and this is affected by the ways used to conceptualise, store and share knowledge; as well as the inert mechanism that enables every member of the franchise community to learn.

TEA – A DRINK WITH JAM AND BREAD!

JOHN CROCKER

In the Hollywood version, tea may very well be a drink with jam and bread but, as any visitor to the West Country will know, here it comes with scones, jam and clotted cream.



Dr Eugenia Cheng cogitating upon a pie

In Devon and Cornwall (as well as parts of Somerset and Dorset) a 'cream tea' comprises scones (to rhyme with 'cones'), pots of jam (usually strawberry), pots of clotted cream and occasionally butter.

The aim of the exercise is, of course, to get as much of the cream and jam onto the scones as possible so that one ends up with no cream or jam remaining in the pots. If one ends up with no jam or cream on one's face or in one's lap then this might be considered a bonus.

The all important question is should the cream go on top of the jam in the way that one puts cream on fruit or should one treat the cream as if it were butter by spreading it onto the scone and then spreading the jam on top. In Cornwall, the correct way is the former but you will not be surprised to hear that Devonians, who can generally be relied on to disagree with their neighbours, assert that the jam should be on top.

Dr Eugenia Cheng, a mathematician from the University of Sheffield claims to have the final word on this dilemma. She has devised a mathematical formula which determines the correct sequence. Dr Cheng says: 'Building a good scone is like building a good sandcastle - you need a wider base, and then it needs to get narrower as it goes up so that it doesn't collapse or drip.'

The resulting formula derived from her endeavours, suggests a ratio of 2:1:1 (by weight) - so the average scone, which weighs around 70g, would require 35g of jam and 35g of cream. The total thickness of the scone, with all its elements, should be around 2.8cm, to allow it to fit into your mouth easily, although etiquette demands that you do not try to eat the whole thing in one go!

Dr Cheng's argument is that because jam is denser, it should come first but this does not take into account the relative viscosities and this is where the difference comes.

I have to admit it is a very long time since I had a cream tea in either Devon or Cornwall but I do recall on my first visit (in 1960) to the two counties that there was a world of difference between Devon and Cornish clotted cream. Devon clotted cream was able to hold its shape, even on a hot day and under pressure, whereas Cornish clotted cream (which incidentally has Protected Designation of Origin (PDO)) was not. With the thick Devon cream, it was easy to build up a thick layer upon which one could dollop the jam whereas with the thinner Cornish cream this was not possible so it was easier to spread the jam thickly then put the cream on top. On no account should you try mixing the cream and the jam together!

In case you think her study was in any way biased, one might note Dr Cheng was asked to carry out the study by Rodda's Cornish Clotted Cream. If anyone would like to sponsor me, I would be happy to re-do my survey to see if anything has changed in the intervening 53 years (although I am still trying to shed the weight I put on from my first visit)!

<OR>





INITIATIVE - UK DEBATES ON OPERATIONAL RESEARCH

SANJA PETROVIC



'Motivated by the long history of debating at Cambridge Union Society and indeed other universities in the UK, we suggest to organise debates to examine opposing ideas and policies within O.R. teaching, research and applications.'

'Doubt everything. Find your own light', Buddha c.563-c.483 BCE

We have recently enjoyed the debate entitled 'Religion Has no Place in the 21st Century' hosted by the Cambridge Union Society. The team speaking for the proposition included Andrew Copson, Chief Executive of the British Humanist Association, Richard Dawkins, an evolutionary biologist and ardent critic of religion, and Arif Ahmed, Senior Lecturer in the Faculty of Philosophy at the University of Cambridge, while the former Archbishop of Canterbury, Rowan Williams, Tariq Ramadan, Professor of Islamic Studies at the University of Oxford, and Douglas Murray, Associate Director of the Henry Jackson were speaking against the proposition. The Cambridge Union Society, which was founded in 1815, is the oldest student debating society in the UK. It is interesting to note that the Union has hosted in its chamber well-known people from a variety of disciplines, including among others Dalai Lama, Winston Churchill, Ronald Reagan and Clint Eastwood.

What is precisely the meaning of debate and debating? Debate is defined in the Oxford dictionary as '*a formal discussion on a particular matter in a public meeting or legislative assembly, in which opposing arguments are put forward and which usually ends with a vote*'. The Cambridge Union Society defines debating as '*a fun activity akin to a game in which we examine ideas and policies with the aim of persuading people within an organised structure. It allows us to consider the world around us by thinking about different arguments, engaging with opposing views and speaking strategically*'.

Motivated by the long history of debating at Cambridge Union Society and indeed other universities in the UK, we suggest to organise debates to examine opposing ideas and policies within O.R. teaching, research and applications. The aim of debates is not to confront different and opposing ideas and concepts, but to open new perspectives on a wide variety of O.R. ideas and concepts, and to advance the O.R. discipline as a whole.

In the following, we shall describe, as an example, two possible topics to open the series of debates, which, we hope, would be attractive and intriguing for the O.R. community:

1. Optimisation versus Sustainability in O.R.
2. Fuzzy versus Stochastic Approaches to Treating Uncertainties in O.R. Real-world Problems

Debate 1: Optimisation versus Sustainability in O.R.

The idea of optimisation is in foundations of O.R. and prevails in a variety of O.R. teaching topics and O.R. applications. This has lasted for several decades up to the recent days. However, this unequivocal primacy of the idea of optimisation seems to be endangered by the breakthrough of the sustainability concept. There is an impression that in many applications sustainable solutions are closer to the reality than 'pure' optimal solutions. Although, the idea of sustainability is not quite new, it is 'younger' than the idea of

optimal solution; the latter celebrated a decade ago its 300th birthday. One can notice that a great research effort will be needed to award sustainable solutions an adequate status. It seems that an acute and comprehensive debate would contribute considerably to enlighten optimisation and sustainability.

Debate 2: Stochastic versus Fuzzy Approaches to Treating Uncertainties in O.R. Real-world Problems

'In these matters the only certainty is that nothing is certain', Gaius Plinius Secundus, 23-77 CE

There are quite eminent O.R. experts who earnestly believe that although there are many competing philosophical and mathematical models of uncertainty, the concept which unites them is certainly that of probability. Others, equally eminent O.R. experts resolutely maintain that the concept of fuzzy sets and fuzzy numbers are an appropriate mathematical fiction to cope with the complexities of an uncertain environment in which real systems exist and operate. It enables theoreticians or practitioners to introduce qualitative reasoning into quantitative domains. Of course, there are very provocative questions to stand whether probabilistic or fuzzy approaches are more suitable for O.R. practice or whether they can be used in parallel.

Format of debates: There are many different formats of debate, each with their own rules (see for example <http://idebate.org/about/debate/formats>, and <http://debate.uvm.edu/dcpdf/debateformatguide.pdf>). The most popular ones are British Parliamentary competitive debating, and a variety of university-level competitive debate formats. For each O.R. debate it will be determined how many speakers will be invited to participate, depending on the topic of the debate. Either two recognised O.R. researchers or practitioners in the relevant topic (UK or international) who will advocate opposing ideas will be invited or teams of participants will debate with a condition that they

consists of equal number of speakers. The time limit on the whole debate and on speeches will be set as appropriate. Debates can allow so-called '*points of information*'. This means that during speeches, speaker(s) on the opposite side may ask a short question or offer short points of rebuttal. There is a well-defined procedure for points of information, namely the maximum number of points of information in a debate, their duration, etc. In competitive debates, judges assess the debaters and choose the winner. Different criteria can be used in the assessment. According to Cambridge Union Society three key criteria to be used in the assessment are: (1) Content of speeches, what was said and the arguments and examples that were used (2) Style of speeches, the language and voice that were used and (3) Strategy: how well the speakers were engaged with the topic, how they responded to other people's arguments and the structure of speeches.

Location of debates: The long and rich history of the UK O.R. annual conferences obliges organisers to offer some new events, which will attract the attention of the major part of participants. Both, the OR Society and the O.R. Conference Organising Team will choose the subject of debate, which would reflect the trend of the O.R. in the UK. They will also choose and invite speakers and choose the chair of debate. Initially, the proposed debates will not have a competitive character, i.e. the assessment of debate would not take place in the first debates. It would be introduced later on when initial experience of organising and running debates is gained.

If you like the initiative and would like to suggest possible topic(s) for O.R. debate series please do get in touch. My e-mail address is sanja.petrovic@nottingham.ac.uk.

20 May 2013

<OR>

CONFERENCE NEWS

EVENT:	IMSIO5 2013	DATE:	3 - 4 July 2013	VENUE:	University of Salford
EVENT:	OR55 Annual Conference	DATE:	3 - 5 September 2013	VENUE:	University of Exeter
EVENT:	Blackett Lecture	DATE:	28 November 2013	VENUE:	Royal Society, London
EVENT:	SW14	DATE:	1 - 2 April 2014	VENUE:	The Abbey Hotel & Golf Club, Worcestershire

KIM 2013

NIGEL CUMMINGS

The 4th and 5th of June 2013 were very special dates in the Operational Research Society's calendar; they were the two days in which the inaugural OR Society Knowledge and Information Management Conference, KIM2013 took place under the chairmanship of Dr Brian Lehaney, Quality Assurance Agency for Higher Education.



Brian Lehaney at opening of conference.

Knowledge management is an integral component of Operational Research; its application has proved to be critical in understanding organisations and their use of resources when considering goods and services, to improve quality.

Upwards of 60 delegates and presenters came together at the Forest of Arden Hotel and Country Club in Meriden, a location, in the very Heart of England. The event hosted around 30 presentations and 25 papers. It also marked the 10th birthday celebration of the journal, Knowledge Management Research & Practice (KMRP).

KIM 2013 built on its spiritual predecessor, KMAC, and benefitted by having the previous editor of KMRP, Professor John Edwards, chair a panel and discussion as part of the 10th Anniversary Celebrations.

Professor Edwards also presented one of the three plenary sessions with Trevor Howes, Director, BRM Fusion Limited and Dr. Jay Liebowitz, Orkand Endowed Chair in Management and Technology, The Graduate School, University of Maryland University College providing the other two. Watch this space and our website for more about these.



Dr Geoff Royston at the Inauguration of KIM 2013

The conference kicked off on the evening before with the inevitable Pub Quiz with Dr Brian Lehaney as quizmaster. With prizes for the first three, it meant all teams ended up with a prize for their endeavours.

The conference proper opened on Tuesday morning with a welcome from both the conference chairman, Dr Brian Lehaney and the current OR Society president, Dr. Geoff Royston. This was followed by a speed networking session which completely broke the ice and put all of us on first name terms and raring to go.

The first plenary was given shortly after this session, it was provided by Professor John Edwards, Aston Business School, and entitled, 'Message Received and Understood?'. Knowledge is a two-way process; there is a 'sender' and a 'recipient' but all too often the emphasis is on the sender or the sending with little thought being given to the recipient. When we create repositories or 'share' knowledge, how often do we consider whether the data is what the reader/user/receiver wants to know and is in a form that makes it understandable?

Trevor Howe's plenary presentation was designed to offer, 'Practitioner insights into realising sustainable benefits from planned change using collaboration, codification and technology'. Trevor's presentation was aimed at showing how to bring people



Hani Okoroafor at KIM 2013

and [change] teams together to improve the change process and gain better results for all concerned.

The closing plenary for KIM 2013 was provided by Dr. Jay Liebowitz. The title of his presentation was, 'Beyond Knowledge Management: What Every Leader Should Know'. This presentation highlighted the



L-R Plenary speakers Dr. Jay Liebowitz, John Edwards, Trevor Howes and Brian Lehaney Chair at KIM 2013

components in business strategy that could be utilised to gain competitive advantage – they included knowledge management; strategic intelligence; globalisation; e-learning; social networking; virtual worlds; technology; human capital; relationships; and innovation.

While it is not possible or even desirable to detail the content of every presentation from a conference, keep watching this space and our website for more articles from this, the first of what hopefully will be many more KIMs to follow.

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NEWS OF MEMBERS

NEW MEMBERS (July 2013)

The Society welcomes the following new members, HUGH AGGLETON, Hants; SARAH HURTON, Hants; GERAINT ROBERTS, Kent; NEIL SCOTT, Kent; SAMUEL WONG, Manchester;

and Reinstated members,

KENNETH BLACKIE, Swansea; MARK BLOOMFIELD, Stevenage; NIELSEN FERGUSON, Hants; HERNAN CHAVEZ PAURA GARCIA, Mexico; ANDREAS KATELIS, Greece; RUTH JOHNSON, Sheffield; XIAODONG LI, Hants; DJAMILA OUELHADJ, Hants; RICHARD RICKHARDS, Kent; LIANG WEN, Lancaster;

and the following student members,

DARAH AQUEI, Manchester; DANIEL FAIRFIELD, Coventry; YE HOU, Edinburgh; Gulmira Khussainova, Khussainova; QINYUN LI, Cardiff; RYAN LOCKIE, Birmingham; SHIOVAN NI LUASA, Ireland; SARA McCracken, Birmingham; MOHAMED QATAN, Oman; REBECCA SARTO BASSO, London; SAMAR SHILBAYEH, Manchester;

Total Membership
2317

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 Candidate Associate (CandORS)

Sarah LIVERMORE
Ibrahim KUCKKOC

Admit to the category of Associate (AORS)

David JARRETT
David GILDINGS

Admit to the category of Associate Fellow (AFORS)

Kathryn WALLS
Susan WATTS

<OR>

UP, UP AND AWAY!

NIGEL CUMMINGS

Virtual Vertical Integration (VVI) is the latest term to add to the ever growing list of supply chain management techniques. Coined by chief procurement and supply chain officer Tom Linton at Flextronics, VVI is apparently going to 'rock the world'.



In a presentation he gave recently at the Institute for Supply Management annual conference, Mr Linton explained in no uncertain terms why VVI was the next best thing in supply chain management. Apparently VVI can act as the 'managed alignment of external supply chain capabilities and leverages multiple levels of those capabilities to improve profitability and cash flow'. Apparently this is true where the suppliers are seen as an extended enterprise that behaves as if internal to the company.

Companies involved in this type of supply chain are composed of four types, layers or tiers. At the top there is the brand level, companies such as Apple, who are highly focussed on research and development and marketing but do not own factories. The second tier is the 'integration' level, which assembles things to create a product, such as Linton's own firm Flextronics. Below that is the 'device' level where parts come together, that may for example be in the electronics industry where semi-conductors or chips are integrated. And the fourth tier is suppliers of raw materials.

The companies that will flourish until someone invents a new buzz phrase are, naturally those which understand VVI. Apparently, the tools and technology now exist to enable this.

It is about fundamentally looking at the multiple tiers of your supply

chain and figuring out how to connect it in a way that gives you greater control and therefore your financials have greater results, whether it is cash, operating profit or revenue growth.

Basically Virtual Vertical Integration is just a new model of customer-supplier relationships which focus on core-competencies and a value-added partnership to meet the challenge of supplier management. Its use may be most effective in those companies who specialise in high-tech, high-volume and commodity manufacturing.

Combining the concepts of 'virtual organisation' and 'vertically integrated', this model is based upon a partnership between customers and key suppliers of strategically critical materials and components. The virtual vertical integration model requires new management thinking – the reward for this could be improvements in efficiency, productivity and flexibility.

The next major step will be to develop virtual companies employing virtual people using virtual materials to make into virtual products to sell to virtual customers, thus cutting out all the waste. (Actually, this sounds remarkably like a definition of the stock market.)



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- **Frontier Analyst® Professional** - a performance measurement tool, using Data Envelopment Analysis (DEA), to give a relative assessment of the performance of a group of business units. Used in organisations that have a network of branches/ depots or in situations where a group of similar "units" can be identified (for example, hospital wards, banks, shops, teams within a company and so on). Single user (75-unit analysis capability) licenses start from £195 + VAT.
- **Impact Explorer™** - a voting, ranking and matrix assessment tool. Groups use radio based handsets coupled with the Impact Explorer software to register their opinions or cast votes on the subject being discussed. The system supports up to 250 participants. Cost depends on the handsets being used. Prices start from as low as 31 GBP + VAT per handset. Handsets can be purchased in any quantity. Accompanying software license starts from £395 + VAT. System requires both hardware and software.
- **Interwrite™ Response** - a classroom response system. Using radio frequency or infra-red handsets, students respond to questions presented in PowerPoint, the internal question editor, or to impromptu questions asked verbally. The system can support thousands of students. Cost depends on the handsets being used. Prices start from as low as 31 GBP + VAT per handset. Accompanying software is included with the receiver kit, cost depends on the system being used. Discounts available for volume purchases of handsets.



BIG DATA – BIG BROTHER

NIGEL CUMMINGS

How much do governments know about us?



During June 2013 an item published in *The Guardian* quickly became viral across the 'civilised' world. The article was about companies with offices in the United Kingdom who were regularly employing GCHQ resources and the controversial US developed PRISM electronic surveillance program, to manage and collect 'intelligence' from Internet and other electronic service providers.

The article alleged that executives of several companies such as Facebook, Google, Apple, Microsoft, Dropbox and Yahoo were transferring data or information about specific individuals for analysis by the PRISM programme. PRISM, by the way, stands for 'Planning Tool for Resource Integration, Synchronisation, and Management'.

Our government was quick to point out this was not the case. Foreign secretary, William Hague MP stated, 'Claims of GCHQ circumventing law were fanciful nonsense. Britain's electronic and eavesdropping headquarters always acted within the law'. So that's alright then.

Unfortunately that article and the ramifications since publishing it, seems to have galvanised public thought into thinking about when, why and how governments deal with information that is relatively easily derived from social network and public subscription sites. Sites which utilise the Internet as their conduit for synchronous knowledge transfer.

As a result of this sensitisation, a rash of articles has appeared at home and in the international press about data collection and analysis for covert intelligence resources. The *Times of India* recently ran an article that claimed, 'With every phone call they make and

every web excursion they take, people are leaving a digital trail of revealing data that can be tracked by profit-seeking companies and terrorist-hunting government officials'. It further reported that America's National Security Agency (NSA) was actively perusing millions of US customer phone records at Verizon Communications and snooping on the digital communications stored by nine major internet services to illustrate how aggressively personal data was being collected and analysed.'

To its credit the *Times of India* did also state that, 'The NSA isn't getting customer names or the content of phone conversations under the Verizon court order, but that doesn't mean the information can't be tied to other data coming in through the Prism programme to look into people's lives, according to experts'.

Interestingly *The New York Times* published an article by James Risen and Eric Lichtblau entitled 'How the U.S. Uses Technology to Mine More Data More Quickly'. It gave a fascinating insight into how American analysts hunting terrorists sought new ways to comb through the troves of phone records, e-mails and other data piling up as digital communications exploded over the past decade, they turned to computer experts who had developed complex equations to thwart Russian mobsters intent on credit card fraud.

Furthermore the article revealed that the NSA's million-square-foot data centre in Utah, due to open this year, is believed to be intended for storing personal data indefinitely. It also claimed that software technology now allows for the highly automated and instantaneous analysis of enormous volumes of digital information at the NSA, and this capability has transformed the NSA into a 'virtual landlord' of the digital assets of Americans and foreigners alike.

The new technology it says, has for the first time, given America's spies the ability to track the activities and movements of people almost anywhere in the world without actually watching them or listening to their conversations. With little public debate, the NSA has been undergoing rapid expansion in order to exploit the mountains of new (Big) data being created each day.

Just remember that everything you put on Facebook, LinkedIn, YouTube, Paltalk and the like is being carefully monitored and analysed by many organisations for many and varied purposes.

[Reminds me of something a colleague once told me, many years ago. He had a friend at GCHQ who asked him to fax him some information. When asked what his fax number was, his reply was, just fax it to any number and I will get it. (Ed)]

YOR 18 MANUFACTURING STREAM

NIGEL CUMMINGS

The manufacturing stream at YOR 18 was organised by Dr Fereshteh Mafakheri, (University of Greenwich)



Dr Fereshteh Mafakheri

The opening paper in this stream - Manufacturer-Retailer Coordination in Reverse Logistics: A System Dynamics Approach - was presented by Fereshteh and written by her and Dr Fuzhan Nasiri (UCL). In particular, they were concerned with what happens to printer cartridges after they have been discarded.

At present, some 350 million of these items end up in landfill sites every year. The value of this waste is also estimated at around \$10 billion in the US, alone.

The problem with reverse logistics, however, is that whereas all of these cartridges originated from a relatively small number of manufacturers they end up spread over a very large number of users who, by and large, will be disposing of them in very small numbers at unpredictable times. There is also nothing about them which makes it easy to isolate them from the waste that finds its way to the landfill site so collection needs to take place before it gets there.

The main drivers of the reverse supply chain were three-dimensions of sustainability - society, economy and environment. Society exerts pressure through legislation and the power of green consumers. Economically, there is value in the materials used which may be recovered at less cost than from their primary sources. These processes are also likely to generate employment. Finally, the environment benefits as it reduces the amount of material ending up in landfill sites or incinerators although if the latter are used to generate power (i.e. useful energy) then this will offset some of the benefits.

The first question in any reverse supply chain operation is, 'Is it

viable? Will there be enough items coming back? How will these find their way into the [reverse] supply chain – will the disposer be willing to send them back or will they have to be collected?

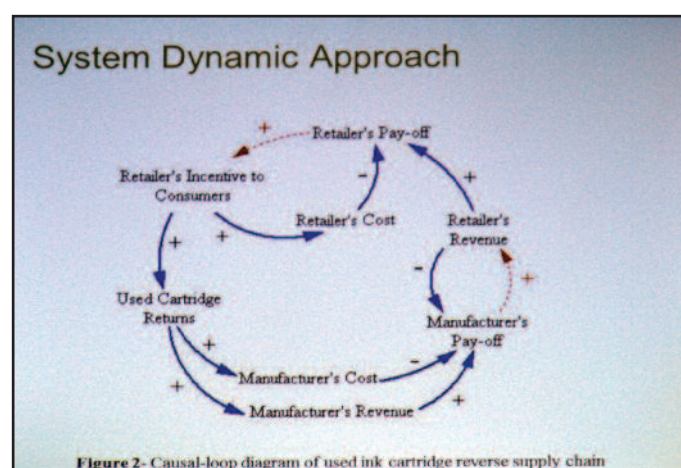
Given product acquisition is viable; the next step is testing of the returns to determine the condition of the returned product. It was at this point where choices had to be made, the choice of whether the product was too worn to be recycled or whether it could be returned into remanufacturing. Those items selected for remanufacturing could then enter the reverse supply chain process so they could be returned to manufacturing facilities, remanufactured and returned back to market.

The whole process has to be carefully orchestrated and, of course, everyone involved has to be paid out of the revenue gained from the resale of the product. The decision problems of coordinating parties was formulated in a dynamic setting where there existed a feedback relationship between reverse sharing, incentive, strategy of manufacturer and return incentive policy of retailer. It was decided to use System Dynamics (SD) because it aided understanding of how systems respond to change and emphasises the importance of feedback and delays in dynamic systems.

The model was used to investigate the effects of three carbon policies: no carbon mitigation policy; a carbon tax regime and; a cap – and – trade framework. For the printer cartridge case, the carbon tax policy seemed to be producing the best results.

A video of Dr Mafakheri's presentation on reverse supply chains will be available from our website shortly.

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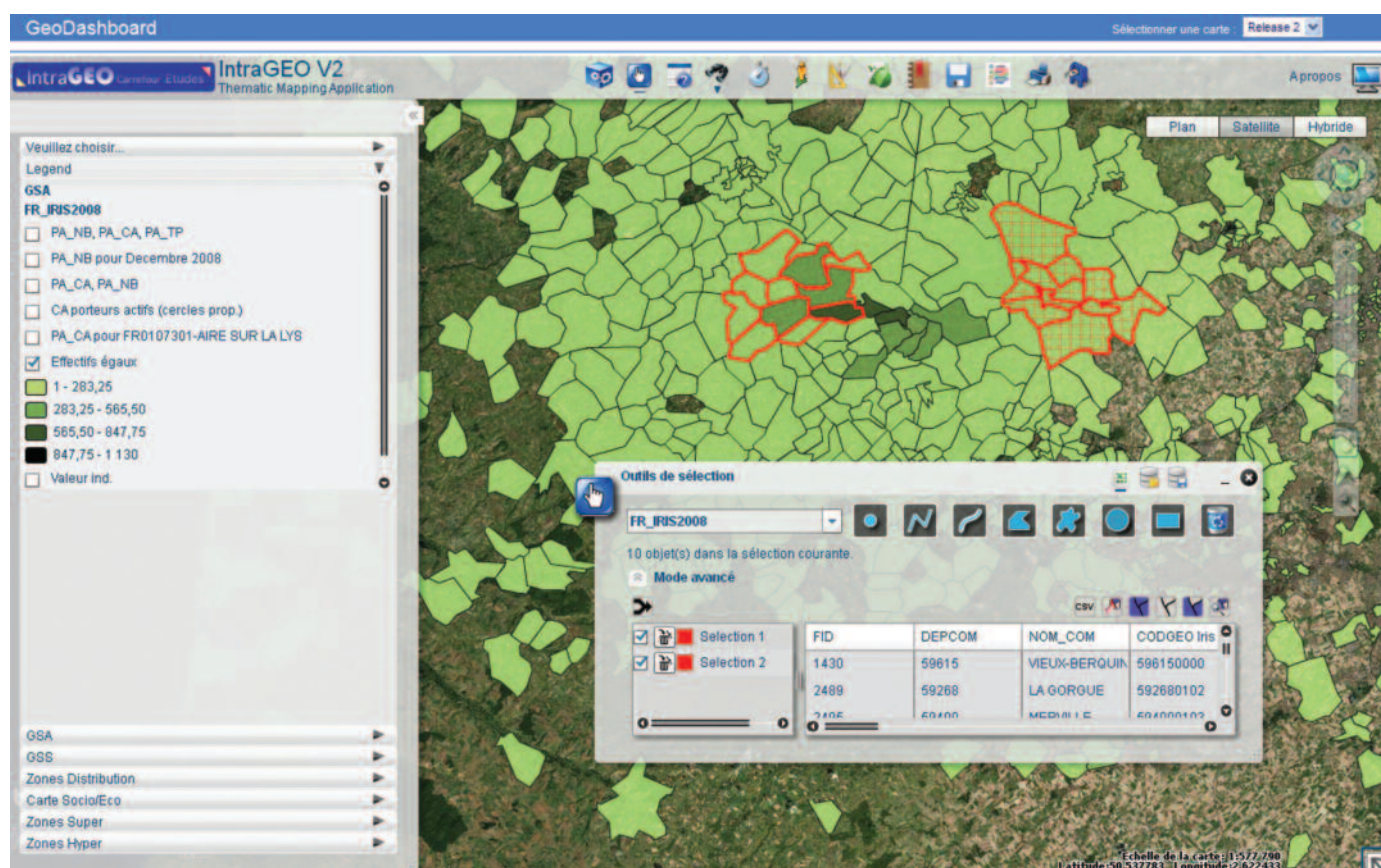
Dr Fereshteh Mafakheri YOR 18 SD slide



WHERE NEXT

NIGEL CUMMINGS

Location intelligence is the capacity to organise and understand complex phenomena through the use of geographic relationships inherent in all information - its power is increasingly being incorporated in new analytics applications.



Galileo's enterprise-wide solution, based on ArcGIS, helps Carrefour manage 10,000 stores worldwide

Location Intelligence tools are capable of utilising a variety of data sources which include aerial maps, geographic information systems (GIS), consumer demographics as well customer records. The term Location Intelligence is often used to describe tools and data employed to geographically 'map' information. These mapping applications can transform large amounts of data into colour-coded visual representations that are useful for highlighting trends and revealing meaningful intelligence, according to Esri, a well-known company in the field of GIS.

Although traditional atlases have served us well for hundreds of years, they are essentially out-of-date even before they are published. The world is changing rapidly and it is difficult for traditional atlases to keep up with the pace of that change. A new breed of atlas has been evolved to utilise geospatial technology with GIS.

GIS is the technology that makes atlases come alive, providing a

framework for understanding relationships between countries, their boundaries and their inhabitants. Today's atlases are often replete with online connections which enable them to access huge stores of demographic data. They have in effect become global gathering places for integrating and applying dynamic knowledge.

Like business intelligence, location intelligence supports analysis and decision making. But for the past 20 years, these two data-centric disciplines have forged independent but parallel paths. Only now are they beginning to converge.

The creation of location intelligence is directed by domain knowledge, formal frameworks, and a focus on decision support. It is used by a broad range of industries to improve overall business results. Applications include: Telecommunications, Financial Services, Logistics and many more.

Location intelligence has also found its way into Government where

it is routinely used for generating census updates, urban planning, in law enforcement crime analysis, in emergency response, environmental and land management.

In healthcare it is often used for hospital site selection, in higher education it can be used in student recruitment analysis and campus mapping. For the hotel and restaurant sector, local intelligence has proved its worth in customer profile analysis, venue site selection, and target marketing. In the insurance sector it is often applied to the problems associated with address validation, underwriting, risk management and claims management

The application of local intelligence techniques seems almost limitless. It has proved for so many industries to be a valid part of analytics associated with capacity planning, customer segmentation, supply chain optimisation and workflow management and its adoption keeps on growing into virtually all business sectors.

In food retail, it is interesting to note that Carrefour Group, the second-largest retailer in the world with nearly 10,000 stores around the globe, has implemented an enterprise-wide local intelligence enabled marketing solution from Galigeo called Geodashboard, and it incorporates Esri's ArcGIS to enhance existing enterprise business intelligence (BI) software and improve decision making.

Carrefour staff around the world use this software to guide them through different operational workflows including retail site selection and competition analysis. Geodashboard improves their expansion and development strategy, optimises direct marketing activities, and enhances store performance by providing a better understanding of sales territories and customer needs.

Galigeo's Geodashboard can utilise Bing Maps, Nokia data and aerial and satellite images to gain insight and locate the best positions to target marketing. By representing and displaying data on interactive maps, it can identify hidden trends that may not be discernible in tables, charts, or other dashboard widgets traditionally used in BI solutions.

Geodashboard is not the only player; Pitney Bowes for example have recently bought MapInfo, a powerful Microsoft Windows based mapping and geographic analysis application. Designed to easily visualise the relationships between data and geography, the latest version of MapInfo Professional makes it fast and easy for its users to create, share and use maps. If you are interested in seeing how MapInfo works, a trial version can be downloaded at: <http://web.pb.com/mipro-115-mapinfo-welcome>

<OR>

OR SOCIETY APPROVED TRAINING COURSE

DATA MINING: TECHNIQUES AND APPLICATIONS

Due to the demand for this course, an additional date has been added to the schedule: **11 July 2013**

Our Data Mining course will allow delegates to gain an overview of the process and learn about predictive analyses such as regression and classification. You'll learn how to use data for descriptive purposes such as clustering and association.

Once you've completed the course, you'll be capable of building your own decision models and see how to use data mining techniques can be used effectively in a range of applications such as marketing, finance and the public sector.

- Learn more about the data you already have in your organisation and improve the management of your information
- Improve your business processes
- Create better decision models and learn new applications of data mining

This 'hands-on' course is being delivered by **Bart Baesens** and **David Martens** and will run on 11 July at the OR Society's training suite in Birmingham.

Fee: £660 + VAT Members; £710 + VAT Non members



RISK PREDICTION IN THE ICU

NIGEL CUMMINGS

Predictive analytics can now be used to predict if and when medical interventions will be required and, hopefully, provide better patient outcomes.



Electronic patient indicator chart

Intensive care units (ICUs) are amongst the most data intense areas in any hospital, the equipment in them produces vast quantities of patient data, but until now, most of that data was discarded.

Currently it is the job of medical practitioners to determine which of that data is useful and which is not. In that area there lies risk for both patient and medical staff alike, as it is easy when manually sifting through vast quantities of data to miss or misinterpret data which could provide information vital for successful patient interventions and outcomes.

Machine learning and predictive algorithms could help doctors make sense of the overload of data that streams out of the many patient-monitoring machines in an ICU. To that end a US Company called Etiometry has set itself the task of building clinical-decision support systems that can interpret large volumes of real-time patient data and provide doctors with snapshot views of actionable information.

Initially trialling in Boston MA, clinical decision support systems could be rolled out to hospitals worldwide, if proven useful in assisting in the realisation of better patient outcomes. Etiometry's founders, some of them former aerospace navigation guidance engineers, decided to build a decision support system for ICU use because they realised there was a lack of systems control or analytics for patient data. They also realised there was a lack of tools to help physicians make decisions according to Dimitar Baronov, Vice President and CTO at Etiometry.

'The only thing you have is human expertise and training. Analytics could help physicians interpret their data, ultimately allowing them to make better decisions, intervene in a more timely manner, and catch adverse events before they happen', says President and CEO Evan Butler.

The ideas behind decision support in healthcare are not new—for decades researchers have tried to bring computational tools into the hospital that can assist physicians with decisions related to patient diagnoses and treatment. Companies such as Siemens and Philips have long provided systems that can alert clinicians to early signs of a patient's failing health, but the complexity of human biology and the slow adoption of electronic records by hospitals worldwide have delayed the technology. Great variability exists between patients - a normal heart rate for one person could be near-death for another.

Furthermore, a medical computer's perspective is often limited to looking at one small part of the patient's problem, whereas an expert doctor can understand the context of the 'huge picture' of what's going on with a patient. Doctors' time is both precious and costly; any machine learning assistance that improves efficiencies and reduces the overheads associated with diagnosis and treatment could reduce costs and save more lives.

Most information about patients is held on paper. Most hospitals store data on ICU machines for about 72 hours and then delete it. If the data can be captured electronically it can, medical ethics permitting, prove useful in analysis.

Using these large data collections to improve predictive modelling on systems trained from real-patient data, could tell doctors what the different predicted outcomes would be for each treatment option and the degree of uncertainty associated with each prediction. If the models were accurate enough, they could be used when trying to decide between different treatments for patients.

Etiometry's technology has been designed to present this information in a user-friendly interface that lets doctors quickly see which ICU patients are at risk and what that risk is. The company's software framework can interpret all patient data generated in an ICU—from instantaneous data, such as heart rate, to data collected over multiple hours, such as blood work.

Initially Etiometry has focused on paediatric ICUs, using machine learning to build algorithms from retrospective data they have received from Boston Children's Hospital, the Toronto Hospital for Sick Children, and other centres – it expects to begin testing with real-time data in 2014.

For further information about Etiometry's tools go to: <http://www.etiometry.com/>.

MASTERING ANALYTICS

NIGEL CUMMINGS

Business analysts are one of the fastest-growing jobs of 2013.

You can find them in a variety of organisations, including Fortune 100 companies, small businesses, universities, non-profit and government organisations around our world. The Harvard Business Review has labelled the position of business analyst or data scientist as the 'sexiest' job of the 21st century.

In 2010 the UK Commission for Employment and Skills issued a paper stating that UK businesses should invest in the right skills: as there was a need to ensure that skills acquired by the UK workforce could provide sustainable benefits to the individuals concerned. This means focusing on those skills that are most in demand and generate the most value to the individual, employers, the economy and society; the skills referred to were categorised as High Performance Working (HPW)

HPW skills include analytics, business analysis and advanced maths numeracy, all of which offer, according to the report, an important potential vehicle for inspiring organisations to act to enhance their competitiveness and performance. Additionally, business-analyst jobs are predicted to increase by 22% by 2020, according to a recent announcement from the U.S. Bureau of Labor Statistics.

Unfortunately, the growth of our technologies has exceeded our supply of qualified talent. 90% of the world's data today has been generated in the last two years, and we simply cannot keep up with demand unless increasing numbers of analysts are trained and recruited. According to a recent McKinsey & Company big data report, by 2018, the United States alone could face a shortage of 140,000 to 190,000 professionals with deep analytical skills, as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.

In a recent report by e-Skills UK and SAS (Big Data Analytics: An assessment of the demand for labour and skills, 2012-2017), the demand forecast for staff with big data skills is predicted to rise by 92% between 2012 and 2017; this equates to an annual demand of approximately 28,000 positions in the UK per year. In the same report, the demand for data scientists is said to have grown by 350% over the past five years.

To keep up with the demand, colleges and universities are developing master's degrees in business analytics that are ideal for recent undergraduates with a quantitative background (i.e. science, technology, engineering, and mathematics and business degrees). Having a degree has been shown to improve a student's chances of securing a job, with the benefits higher for those who secure a master's degree over a bachelor's degree alone.

Recently, higher-education consulting firm Eduvantis reported that in the past three years there have been more than 15 new master's-level degree programs centred on data analytics launched in North

'Having a degree has been shown to improve a student's chances of securing a job, with the benefits higher for those who secure a master's degree over a bachelor's degree alone.'

America. This type of degree is a focused, business-meets-analytics program that can be completed in one year or less (called a Master of Science in Business Analytics or MS-BA). At this time, only a handful of universities offer an MS-BA degree.

In the UK innovative institutions such as Warwick University offer MSc qualification in Data Analytics. In fact the Warwick Data Analytics MSc is a new course that taps into contemporary computer science whilst understanding that Data Analytics is a top national and international priority, needed in every sector from cyber security to retail. Warwick's MSc in Data Analytics is operated as part of Warwick's collaboration with the New York Centre for Urban Science and Progress.

Many of the programmes on offer to aspiring analytics professionals offer a focus on experiential learning, and students work on actual companies' business problems to gain real-world experience. Further, the curriculum is often designed around skills which companies specifically need in this area. Students in these programmes typically require zero to two years of work experience but there are courses (both full and part-time) available for those with more experience.

No matter which path students or working professionals decide to take, obtaining a master's degree in the field of information systems or more specifically business analytics is likely to have big benefits. It provides better credentials when pursuing higher-level roles in a company; these graduates are virtually guaranteed employment as they are also helping fill the talent gap created by the changing demands of big data.



ARRANGED CAREERS

NIGEL CUMMINGS

Predictive, prescriptive analytics may decide what jobs future generations will do.



IBM's India Research lab has developed a predictive, prescriptive analytics platform for application in the education sector. This new platform is by no means restricted to users in Asia though; it has so far proved so successful that it may one day be applied globally to assist educators in providing the best possible career foci for students.

Applying analytics to children going through the first stages of their education programme can find aptitudes and provide useful 'possible' career selections. This sounds dangerously like

'grooming' but if used properly, it could ensure that children end up doing the jobs for which they are best suited.

IBM's India Research lab is in the process of finding answers to many education-related problems with a practical approach which entails the use of analytics' tools. IBM is developing models which can predict the areas where students can do better and identify those areas which need more work.

It will be of no surprise to hear that it has already been used with some success in the US. Data from a number of sources has been used to develop tools which could assist educators in offering the best career choices for their students. Results so far have been encouraging.

Ramesh Gopinath, Director, IBM Research India recently said of the application of analytics, 'As a student goes through courses, every test is recorded electronically (in fact, it is done in most of the US schools). With this kind of data, we can build models of students and cluster them to categories based on some analytics. So we can say, this student is similar to this cluster of people and predict how he can perform,'

At the moment it is used to predict how well students are likely to perform. The next stage is likely to be prescriptive by identifying the 'best' for individuals and prescribing the courses they need to undertake to help them achieve this.

IBM India calls this new area of analytics 'education as healthcare hypotheses'. Just as one can use analytics to prescribe suitable regimens for patients, so one can do the same for students.

IBM's Research lab in India is also working on projects to use analytics to improve content management which can address the skill gaps of the students passing out of colleges and universities.

<OR>

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ROLL UP! ROLL UP!

NIGEL CUMMINGS

Ticketmaster, the company who claim to provide all our entertainment needs under one virtual roof with tickets for theatre, concerts, sport, family events, clubs and more, have added analytics to their tool box to ensure customers and performers alike can benefit from improved targeting and venue choice.



Ticketmaster has launched an analytics service that will enable venues, artists and teams to target their marketing campaigns in Britain. The service is called LiveAnalytics and it will utilise Ticketmaster UK's database of over 11m people who have attended a concert, show, game or theatre performance giving information on preferences, ticketing trends and industry benchmarks amongst other customised data.

The aim of LiveAnalytics is to provide entertainment providers insight into how, where, and to whom they can sell tickets. At the same time, data will be collected that can be used to measure the effectiveness of marketing campaigns which will be used to improve future campaigns.

LiveAnalytics has been in service in the US since 2011 and will be rolled out across other areas such as Sweden, Norway Denmark, Germany and Australasia this year. The firm calls LiveAnalytics 'a collection of rich analytics products that allow clients to better understand and engage with their customers'.

The tools can also be used when brokering sponsorship opportunities and for providing insight into existing partnerships which could prove valuable for brands that need to constantly justify a return on investment.

According to a spokesperson for Ticketmaster. 'We are really excited

to be launching LiveAnalytics and look forward to showing our clients how they can better connect with their fans and ultimately sell more tickets. By providing access to our rich and unique fan insight, LiveAnalytics brings a new level of service and knowledge to our UK client base. LiveAnalytics has become an essential part of our marketing campaigns as it forms the basis for how we talk to our customers and through what channels. In the past, we had to rely on past bookers' demographics and we had to make some assumptions, but now we can delve further. The beauty of this data is that it takes the guess work out; it gives you data to get the job done.'

Ticketmaster was founded 1976, in Phoenix Arizona by college staffers Albert Leffler and Peter Gadwa and businessman Gordon Gunn. Leffler came up with the name Ticketmaster for the new company and their first operation was established in Albuquerque, New Mexico. In 1977 Electric Light Orchestra appeared at the University of New Mexico, it was the company's' first ticketed concert. In 1981 Ticketmaster UK was established in London. By 1991, Ticketmaster was big enough to buy out its main rival Ticketron who had been around since the 1960s and had introduced 'electronic box offices' and placed them in publicly accessible locations (according to Wikipedia).



YOGURT ANALYTICS

NIGEL CUMMINGS

It may only be soured milk to you, but it is big business for Groupe Danone.

Groupe Danone is a French-based multinational corporation that claims world leadership in fresh dairy products; you will find its products - yogurts, cereals, biscuits and bottled waters on the shelves of virtually every supermarket in Great Britain, the US and many European countries. Danone products are ubiquitous.

The Dannon Company, a subsidiary of Groupe Danone, uses IBM Smarter Commerce to support yogurt market gains with Big Data Analytics. Analytics ensures it has the right product mix delivered at the right time to satisfy consumers in the highly competitive \$7 billion U.S. yogurt market.

The cloud based solution also allows the company to improve its real-time forecasting abilities. It enables the company to best manage dispersal of approximately 200 types, flavours, styles and sizes of cultured refrigerated and frozen dairy products. The market aimed for is the 'health through food market' which many believe is key to maintaining a healthy life from cradle to grave.

To meet this market Dannon needs to ensure product availability at the shelf at the right time and minimise waste through optimized forecasting. As such the company works with food retailers and

other partners to maintain competitive advantage in the highly churn-ridden (no pun intended!) and growing yogurt market.

Dannon uses IBM analytics software to analyse shopper behaviour through the use of big data and predictive analytics. It provides the most appropriate solutions here because it can cope with the varying and continually changing demands of promotional pricing strategies. This helps them anticipate how much additional yogurt is needed by its retailer customers, whilst also keeping in mind yogurt's limited shelf life.

'Our goal was to eliminate the time our sales team was spending on forecasting and instead focus their attention on executing their promotional plans, allowing them to work more closely with our retailer customers,' said Timothy Weaver, Chief Information Officer, the Dannon Company. He also said that utilising IBM's predictive analytics resulted in streamlining the forecasting process for its sales team, and increasing planning accuracy from 75% to 98%. Once again analytics has proved it can provide enterprise-wide cost benefits and improved efficiencies.

<OR>

PROBLEM SEEKING SOLUTION OR SOLUTION SEEKING PROBLEMS?

JANE PARKIN

An exciting innovation at Making an Impact, the 'practitioner's day' at OR55: 4th September 2013, Exeter.

If you are a practitioner with a problem looking for solutions or an academic with an approach from which you think more people can benefit – this is the session for you! Just prepare a poster; and prepare a 40-second presentation to sell: 'Why you should come and see my poster'. On the day, all poster-makers will present in plenary, followed by break-out groups around each poster. If you would like to present a poster, please contact janeparkinch@gmail.com. And if not – do come along anyway, to take your pick of the problems and solutions that match your own needs.

Making an Impact is designed for anybody whose day-job is to help make organisations more effective – through analytics, decision support, business analysis, management science, operational research, or just plain problem-solving common sense – whatever the job title, whether external consultant or employee.

As well as the academic-practitioner poster session, we will be running a series of workshops. Confirmed and planned workshops include: Performance measurement in the public sector, with leading expert Max Moullin; Data Visualisation, with Ian Taylor of Flying Binary (star of last year's conference); Tackling Fraud and Error, led by Bill Parnham, Chief Analyst at the Department of Work and Pensions; MCDA, simulation and System Dynamics technique tasters; the new UK data service; networking for introverts; and more. It's not too late to influence the plans, so if there is a particular workshop or technique

taster you would like to see, or indeed to facilitate, please get in touch (ruth.kaufman@btinternet.com).

To round off the day in the best possible way, you can follow up the inspirational ideas and learning from the day, and cement the networking over a relaxed drink, courtesy of Prospect Recruitment.

The day will provide a fantastic opportunity to exchange ideas and expertise with people in similar fields, to explore issues of immediate relevance to practice, to try out new techniques and see if they work for you, to meet leading academics and discover what they can do for you – and what you can do for them, and to build your network amongst likeminded professionals.

And if you can spare longer than one day out of the office, the consultancy and case study stream on Thursday 6th will provide yet more opportunities for stimulating ideas, cross-fertilisation, and networking; and there will be plenty of interest across the whole conference, 4th – 6th, with relevant presentations in a range of other streams, together with a series of tutorials on the Tuesday afternoon.

So – **do** put this in your diary, and **don't** forget – last day for booking at reduced rate is 30th June!

<OR>

CRIMINAL JUSTICE SPECIAL INTEREST GROUP MEETING MARCH 3 AT WEST YORKSHIRE POLICE HEADQUARTERS

MATTHEW GRAINGER, WEST YORKSHIRE POLICE BUSINESS CHANGE OFFICER

The CJ SIG's 1st meeting of 2013 was hosted by West Yorkshire Police and the event stimulated much interest despite being held away from the capital this time, attracting a total of 30 attendees.

Members and speakers came from a wide variety of backgrounds with representatives attending from the Ministry of Justice, Home Office, Police Forces, consultancies and academia. We had the pleasure of hosting five individual speakers on the day each providing their own unique experiences of O.R.

Following a brief introduction to the day from the SIG chair, Ian Newsome, the first contributor, **Amanda Gregory**, from the Centre for Systems Studies, University of Hull, and the Research Champion for the Institute for Continuous Improvement in the Public Sector, gave a talk about systems thinking and continuous improvement in the public sector. Amanda described that, historically, public sector policy making had been dominated by a limited range of approaches, often inadequate to meet the complex new challenges being faced. The potential offered by approaches such as Soft Systems Methodology and Lean Systems Thinking – each with different strengths – were explored in terms of their contribution to continuous improvement. Amanda proposed that further potential existed to exploit alternative systems thinking to challenge the traditional views of structure within the sector, offering Stafford Beer's Viable Systems Model as a more fitting approach to support continuous improvement rather than hinder it.

Charlie Lee, from the Ministry of Justice Forecasting and Model Development Unit, spoke about how vast amounts of management information were captured relating to the court process and it was a challenge to use this in a practical way to understand performance. He explained how his ongoing work had used Data Envelopment Analysis (DEA) to measure criminal court efficiency which enabled the performance of different courts to be compared and new insights generated to identify opportunities for improvement. Charlie demonstrated various examples of his work in graphical form and explained how the complexity of the 'court case mix effect' was taken into account with a weighting system enabling courts to be fairly compared against each other. Although work is still ongoing Charlie explained that there has been a positive reaction from customers interested in the comparative information and the business insight this type of modelling provides. He went on to explain that the next steps of the project would be to apply the DEA approach to over 220 magistrates courts across England and Wales, possibly using a regional model.

Over lunch **Judith Sawbridge** of Staffordshire and West Midlands Probation Trust took the opportunity to use the collective expertise in the room to help explore an issue she had uncovered relating to the link between staff satisfaction and service performance.

After lunch **Daniel Livingstone**, Economics Advisor for the Home Office, described a project he was undertaking for the National Police Air Service (NPAS). He explained how NPAS needed to understand the reasons behind cost differences per flight at each operating base as well as the fixed and variable costs involved. A previously developed Search & Rescue procurement model was adapted and is being used

to help generate the results. The model also allows for the easy identification of cost differences between bases and enables future costs to be projected. The presentation also sparked debate around the potential use of the model as a social cost analysis tool and as a method of determining the carbon footprint of the NPAS.

Peter Loader of Process Evolution ran an exercise to test attendees' understanding of those factors that might affect staffing requirements based on a range of factors, including the number of hours of required work, annual leave, activity analysis of tasks and abstraction rates. He demonstrated how recognising these factors was important in determining efficient staffing requirements and shift patterns. Peter presented some national research he had undertaken into the staffing of response functions across police forces, identifying differences in the approaches of different forces and the impact upon performance. The research findings suggest consideration should be given to: single/double crewing of attendance; the use of appointments; aligning resource availability to demand to remove redundant capacity (and improve response times during busier periods); and breaking down functional and geographic boundaries to increase the flexibility to respond.

Last but not least, the day was closed with a presentation from **Martin Rahman** and **David Fitzgerald** from West Yorkshire Police, Business Change team. Firstly, Martin described the various O.R. techniques that WYP had used historically. These included discrete event simulation models used to model custody processes, lean reviews used to maximise efficiency and productivity and system dynamics used to understand crime processes. He also explained the resistance encountered from operational officers and the need to change the approach to improve buy-in. David then highlighted where a 'bottom up' approach had most recently been used during a force wide Local Policing Review. As part of this review David demonstrated how WYP had produced a 'response calculator' which modelled resource requirements based upon incident data in conjunction with staff perception data. This calculator helped the local teams understand for themselves their demand and enable them to make simple 'what-if' assessments to reflect local circumstances. In conclusion, David and Martin emphasised that senior managers were increasingly seeking 'evidence based' solutions but with increased urgency for answers, and the challenge was to protect the integrity of their O.R. work while at the same time meeting the increasingly demanding needs of the user.

The next CJ sig events are in late June and November (see website for details) and Ian Seath is running a CJ stream at OR55 - contact him if you would like to submit a paper - ian.seath@improvement-skills.co.uk

June 2013

DEA2013 11th International Conference on Data Envelopment Analysis

27-30 June 2013 Samsun, Turkey <http://DEAsociety.org/dea2013>

11th EUROPT Workshop on Advances in Continuous Optimization

26-28 June 2013 Florence, Italy www.europt2013.org

CCISE 2013 International Conference on Complexity, Cybernetics, and Informing Science and Engineering

30 June-6 July 2013 Porto, Portugal www.2013iisconferences.org/ccise

AISE 2013 The Special Track on Academic Informing Science and Engineering

30 June-6 July 2013 Porto, Portugal www.2013iisconferences.org/ais

July – September 2013

Euro XXVI and INFORMS Joint Conference

1-4 July 2013 Rome, Italy <http://euro2013.org/>

IMSIO 5 2013 The 5th European Conference on intelligent Management Systems in Operations

3-4 July 2013, University of Salford, UK www.theorsociety.com/IMSIO2013

GECCO 2013 GENETIC AND EVOLUTIONARY COMPUTATION CONFERENCE

6-10 July 2013, Amsterdam, The Netherlands <http://www.sigevo.org/gecco-2013>

VeRoLog 2013 EURO Working Group on Vehicle Routing and Logistics Optimization

7-10 July 2013 Southampton, UK <https://www.ocs.soton.ac.uk/index.php/verolog/verolog2013>

ORAHS 2013 39th ORAHS 2013 Conference

7-12 July 2013 Istanbul, Turkey, <http://orahs2013.org>

EISTA 2013 The 11th International Conference on Education and Information Systems, Technologies and Applications

9-12 July 2013 Orlando, Florida, USA www.2013iisconferences.org/eista

IMSCI 2013 The 7th International Multi-Conference on Society, Cybernetics and Informatics

9-12 July 2013 Orlando, Florida, USA www.2013iisconferences.org/imsci

IMETI2013 The 6th International Multi-Conference on Engineering and Technological Innovation

9-12 July 2013, Orlando, Florida, USA www.2013iisconferences.org/imeti

WMSCI 2013 The 17th World Multi-Conference on Systemics, Cybernetics and Informatics

9-12 July 2013 Orlando, Florida, USA www.2013iisconferences.org/wmsci

DeMset 2013 Design and Modeling in Science, Education, and Technology

9-12 July 2013 Orlando, Florida, USA www.2013iisconferences.org/demset

QRMSE 2013 Qualitative Research and Methodologies in Science and Engineering

9-12 July 2013 Orlando, Florida, USA www.2013iisconferences.org/qrmse

CKSE 2013 The International Symposium on Cognition/Knowledge Science and Engineering

9-12 July 2013 Orlando, Florida, USA www.2013iisconferences.org/kgcm

IISA 2013 The 4th International Conference on Information, Intelligence, Systems and Applications

10-12 July 2013 Athens, Greece <http://iisa2013.unipi.gr/>

SoCS 2013 International Symposium on Combinatorial Search

11-13 July 2013 Leavenworth, WA, USA <http://socs13.search-conference.org/>

DMIN'13 The 2013 International Conference on Data Mining

22-25 July 2013 Las Vegas, USA <http://www.dmin-2013.com>

30 ISMOR 30th International Symposium Military Operational Research

29 July -2 August 2013, Royal Holloway, University of London, UK www.ismor.com

GAME-ON NA 2013 7th Annual International N-A Conference on AI and Simulation in Games

19-21 August 2013 San Diego, USA <http://www.eurosis.org/cms/?q=taxonomy/term/337>

ICARIS 2013 The 12th International Conference on Artificial Immune Systems

27-29 August 2013 Nottingham, UK icaris2013@dm.unict.it

MISTA 2013 Special Track on Educational Timetabling27-30 August 2013, Gent, Belgium <http://www.schedulingconference.org/>**NICSO 2013 International Workshop on Nature Inspired Cooperative Strategies for Optimization**2-4 September 2013 Canterbury, United Kingdom <http://www.nicso2013.org>**OR55 Operational Research Annual Conference**3-5 September 2013 Exeter, Uk www.theorsociety.com/OR55**International Conference on Operations Research**3-6 September 2013, Rotterdam, The Netherlands, www.or2013.org**ALEA 2013 Artificial Life and Evolutionary Algorithms (ALEA is a thematic track of EPIA 2013)**9-13 September 2013 Azores – Portugal <http://www.epia2013.uac.pt/>**EPIA 2013 Artificial Life and Evolutionary Algorithms**9-13 September 2013, Azores - Portugal <http://www.epia2013.uac.pt/>**Joint GOR Decision Theory and Practice Work Group/DASIG Conference 2013**23-24 September 2013, Hamburg, Germany <http://www2.hsu-hh.de/logistik/GOR-DASIG-2013/>**October - December 2013****ESM'2013 The European Simulation and Modelling Conference**23-25 October 2013 Lancaster, UK <http://www.eurosis.org/cms/?q=node/1874>**IICAI 2013 The 6th Indian International Conference on Artificial Intelligence**18-20 December 2013 Tumkur, India. <http://www.iiconference.org>**DMSI 2013 - International Conference on Advances in Data Mining and Security Informatics**18-20 December 2013 Tumkur, India. <http://www.iiconference.org>**International Conference on Image, Video and Signal Processing 2013**18-20 December 2013 Tumkur, India. <http://www.iiconference.org>

Events Worldwide

The Events Worldwide listing
appears in print quarterly.
To see the full listing go to:

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

REGIONAL SOCIETIES

EAST MIDLANDS (EMORG)

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LONDON & SOUTH EAST (LASE OR S)

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 Sandra Weddell
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 or Martin Caunt
TEL: 020 7215 3317,
EMAIL: Martin.Caunt@dti.gsi.gov.uk

MIDLAND (MORS)

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

MORS - Just messing about with models: experiences as an O.R. practitioner

Date/Time: Wednesday, 09 October 2013 at 18.00

Venue: Aston University

Speaker: Jane Parkin, Independent O.R. Consultant

Abstract: Life as a practitioner is full of interesting questions: how do you start off negotiations with a new client? How do you get to grips with the client's business area and problem fast? How to decide on the most appropriate approach to take/model to use and how to persuade the client that your model will help to solve their problems? What do you do if the client doesn't think an analytical approach will help or even if the client doesn't realise that they have a problem? How best to manage client expectations and relationships? And finally, how best to finish off an assignment to everyone's satisfaction? These issues will be addressed via a selection of consultancy projects and there will be time for discussion on any aspect of working as an O.R. practitioner.

MORS - Florence Nightingale: using graphical statistical analysis to combat the spread of disease

Date/Time: Tuesday, 12 November 2013 at 18.00

Venue: The Club Room, The Old Joint Stock, 4 Temple Row West, Birmingham, B2 5NY

Speaker: Noel-Ann Bradshaw, University of Greenwich

Abstract: Florence Nightingale (from Lea, Derbyshire) is well known in mathematical and statistical circles for her graphical representations of data. But what exactly did these diagrams show and what other diagrams and statistical methods were being used at the time to analyse data? This talk will look in detail at Nightingale's graphical representation of the causes of mortality during the Crimean War. It will demonstrate how these were used by Nightingale and others to show that preventable diseases contributed to the army's high mortality rate and how the use of this data led to dramatic changes to nursing practices in Army hospitals.

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

NORTH WEST (NWORG)

CONTACT: Nathan Proudlove
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SCOTLAND (ORGS)

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CONTACT: Roberto Rossi (Secretary)
EMAIL: roberto.rossi@ed.ac.uk

SOUTHERN OR GROUP (SORG)

CONTACT: Patrick Beullens
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SOUTH WALES (SWORDS)

CONTACT: Dr Jonathan Thompson.
TEL: 029 2087 5524 Fax: 029 2087 4199
EMAIL: ThompsonJMI@cardiff.ac.uk

SWORDS meeting

Cybersecurity: Be Prepared

Date/Time: Tuesday, 29 October 2013 at 17:30 Tea and coffee will be available from 5.30pm in the Internet Café which is just inside the main entrance to the Mathematics Institute.

Venue: Mathematics Institute, Cardiff University The talk will commence in room M/0.40.

Speakers: Meirion Morgan

Abstract: It seems that every week brings a new cyber security threat or report of a data breach at a large organisation. At the same time, the mundane reality of daily life with IT is an ever increasing list of possible threats we have to deal with at a local level. This talk will look at both and draw comparisons between them; it will also explore the quantitative implications of ever increasing computer power and algorithmic development.

Dr. Meirion Morgan

Meirion Morgan was born and raised in the heart of the Cynon Valley (Aberdare), and read Mathematics at the universities of Cardiff and Oxford. He has over two decades of experience in mathematically-focused IT, principally in the financial services sector, and has worked with a variety of UK and international organisations including UBS, Rabobank, London Clearing House, RBS and Lloyds Banking Group.

His career has also extended to establishing companies and includes a structured finance organisation and niche software

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provider to the physical asset management sector, where clients include a number of the world's major utilities. He is passionate about entrepreneurship and has given presentations to participants of the 20Twenty Leadership Program at Cardiff Met. Having started his working life in a WDA-supported technology company in Pontyclun, he is also very keen to see similar creative and digital enterprises being established in Wales.

Currently, he operates via his own consultancy, Meirion Morgan Limited, in which he is also undertaking software product development. Outside of the IT world, Meirion is a Trustee of Valeways, a small charity that focuses on the maintenance and promotion of public rights of way in the Vale of Glamorgan. He is also sings baritone and plays piano.

For further information contact Jonathan Thompson Tel: 029-20875524

WESTERN (WORDS)

CONTACT: Dr Jo Smedley

TEL: 01633 432573

EMAIL: jo.smedley@newport.ac.uk

WORDS meeting

YORKSHIRE & HUMBERSIDE (YHORG)

CONTACT: Stuart Johns.

TEL: (0114) 225 3136

EMAIL: s.l.johns@shu.ac.uk

<OR>

TWO IN A ROW FOR STRATHCLYDE: 2012 MAY HICKS PRIZE WINNERS

GAVIN BLACKETT, SECRETARY & GENERAL MANAGER

The OR Society is delighted to announce the winners of the 2012 May Hicks prize for best student project, and for the second year in a row the winner is from Strathclyde University.

The winner is Geraint Roberts, who is £1000 better off as a result of his award. His dissertation is titled "*GB Rail Efficiency and Benchmarking*" and was undertaken for Asset Management Consulting Ltd. The scope of the project was to evaluate the productive efficiency of Network Rail's operational routes. Data Envelopment Analysis was used to address four aims, namely, to investigate the variation in costs and performance, understand the main drivers of variation, highlight potential opportunities to improve efficiency and identify recommendations for future research.

AMCL is keen to publish Geraint's work more widely, and said, 'Efficiency modelling is a challenging area and we believe Geraint's application of DEA to overall rail system costs at a regional level is the first of its kind. We will be looking to develop these methodologies further with our clients for wider application.'

Geraint is now the financial controller for online retailer The Simply Group. Replying to news of his award, he said, 'I'm a Chartered Management Accountant, so I'm applying OR/MS in a finance / planning & analysis environment. I think the traditional management accountant skills are at risk of becoming marginalised as data volume and variety increases, hence why I took a course in O.R. The best move I ever made, I'm certain - the combination works for me!'

'The scope of the project was to evaluate the productive efficiency of Network Rail's operational routes.'

The runner-up is Kayne Putman (Cardiff University), who received a cheque for £250. Kayne's project modelled psoriasis patient flow through secondary care therapies at Aneurin Bevan Health Board in Newport, South Wales.

Thanks to everyone who contributed. The 2013 competition will be announced later this year, with a deadline of 31 January 2014 for entries.

Congratulations to both winners.

<OR>

SPECIAL INTEREST GROUPS

ANALYTICS NETWORK

CONTACT John Hopes

EMAIL: ANChair@theorsociety.com

Analytics Network Committee Meeting

Date/Time: Thursday, 18 July 2013 at 18.00-22.00

Venue: Pacific Oriental (near Bank, City of London)

Speakers: Sayara Beg (Chair)

Title: Data Science: The Final Frontier

Date/Time: Thursday, 17 October 2013 16.00 - 20.00

Venue: London South Bank University

Speakers: TBA

Content: To follow soon

For more information contact sayara@datanut.co.uk

COMMUNITY OR NETWORK

CONTACT Leroy White

EMAIL: leroy.white@bristol.ac.uk

TEL: 0117 954 5683

COMPLEX SYSTEMS DISCUSSION GROUP

CONTACT: Kevin Gilligan

TEL: 0208 977 8553

EMAIL: GilliganMauve@geo2.Poptel.org.uk

Group meetings to be held at 12 Noon

Last Friday of the month

The Adelaide, Park Road, Teddington

Meeting Title : The Big Math

CRIMINAL JUSTICE

CONTACT: Ian Newsome

TEL. DDI: 01924 292244 **Extension:** 22244

EMAIL: ian.newsosome@westyorkshire.pnn.police.uk

Criminal Justice SIG meeting

Date/Time: Monday 24 June 2013 at 13:30 - 17:00

Venue: Home Office, Westminster

Speakers: Various

The programme will include talks on:

- 'Analysis/prediction of burglaries and use of agent based simulation for crime reduction', by Leeds University;
- 'Measures of effectiveness in Community based policing in the US', by Cogentus Consulting Ltd ;
- 'Developing a 20-year facilities Master Plan for York Regional Police', by ORH Ltd;
- 'Offender segmentation in the National Offender Management Service (NOMS)' by the Ministry of Justice

The event will be at the Home Office in London, from about 1.30pm-5pm, exact location and timings to be confirmed to delegates asap.

Please contact Sue Merchant as soon as possible if you are interested in attending. suemerchant@hotmail.com

DECISION ANALYSIS

CONTACT: Nadia Papamichail

TEL: 0161 275 6539

EMAIL: nadia.papamichail@mbs.ac.uk

Decision Analysis SIG meeting

Joint GOR OR Society Conference

Date/Time: Monday, 23 September 2013 at 09.15 – 17.00

Venue: Helmut-Schmidt-University, University of the Federal Armed Forces (HSU), in Hamburg, Germany

Speakers: Various

We have been working with DASIG-equivalent of the German OR Society to organize a meeting in Hamburg this summer and are in the process of putting the program together.

The website for the event is now online: <http://www2.hsu-hh.de/logistik/GOR-DASIG-2013/> . GOR operates on a slightly different basis from the usual DASIG meetings and the event will follow their format, with participants invited to give talks and submit papers.

Hamburg is a great and destination and the conference promises to be an exciting event and a good opportunity to get to know our counterparts in the German Society, so do consider attending and perhaps also submitting a talk.

DEFENCE

CONTACT: Noel Corrigan

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ACTING CHAIR:

Alan Robinson

Chief Scientist, PCS Dept,

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FORECASTING

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O.R. AND STRATEGY

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

O.R. FOR DEVELOPING COUNTRIES

CONTACT: Eric Soubeiga**TEL:** 020 8659 3265**EMAIL:** eric.soubeiga@hotmail.co.uk or
eric.soubeiga@orpagroup.net

PROBLEM STRUCTURING METHODS

CONTACT: Giles Hindle (Chair)**TEL:** 01482 463457**EMAIL:** giles.hindle@hull.ac.ukor **CONTACT:** Dr. L Alberto Franco, University of Warwick**TEL:** 024 7652 4391**EMAIL:** alberto.franco@wbs.ac.uk

PRODUCTIVITY MEASUREMENT

CONTACT: Ozren Despic**EMAIL:** o.despic@aston.ac.uk

SD+ (SYSTEM DYNAMICS)

CONTACT: David Lane (Chair)**TEL:** 0207 955 7336**EMAIL:** d.c.lane@henley.ac.ukor **CONTACT:** Sally Brailsford (Secretary)**TEL:** 023 8059 3567**EMAIL:** s.c.brailsford@soton.ac.uk

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THIRD SECTOR O.R.

CONTACT: Katherine Byrne**EMAIL:** katherine.byrne@voa.gsi.gov.uk

JOURNALS & SPECIAL ISSUE CALL FOR PAPERS

Final Call for Book Chapter: Business Performance Management Further information at

Abstract: International Conference on Business Performance Measurement and Management (ICBPMM) took place in Lima during September 11 to 13, 2012. The book, entitled '*Business Performance Management*' is scheduled to be published in July 2013. However, the publication in this volume is not limited to the contributions presented in ICBPMM 2012. We would like to invite other scholars all around the globe to submit an extended abstract, followed by complete paper to be published in the above edited book.

Important Dates

Extended Abstract Submission: Immediate
Authors Notifications: As soon as possible
Full Papers Submission: 15 March 2013
Review Report: 1 April 2013
Final Paper Submission: 15 June 2013
Publication Date: July/August 2013

Call for Papers:

Journal of Simulation Special Issue on Simulation for Sustainable Healthcare

http://www.palgrave-journals.com/jos/jos_cfp_sush.pdf

Abstract: The Journal of Simulation (JOS), an official journal of The UK Operational Research Society, aims to publish methodological and technological advances in the application of simulation modelling-related theory and practice. JOS publishes material in a wide range of domains, including manufacturing, service, defence and healthcare, as it seeks to interest and provoke discussion within

the wider simulation community. JOS has recently been accepted by Thomson Reuters for indexing and inclusion in the Science Citation Index (SCI). JOS will publish a special issue on simulation for achieving sustainable development in healthcare.

The special issue editors invite contributions in conceptual, methodological and technical advances to modelling for sustainability in healthcare. Studies that have applied M&S for practical problem solving and have considered the TBL of sustainability are also welcome. The review process will be the same as that used by the journal. Topics suitable for this special issue include, but are not limited to, the following:

- Cross-domain review of literature pertaining to M&S for sustainability, with the objective of furthering sustainable healthcare simulation.
- Conceptual models and frameworks to guide the development of models for sustainable healthcare. Empirical validation of the same.
- Methodological aspects pertaining to modelling for sustainability, for example, the use of hybrid simulation models that incorporate both productivity and sustainability-related criterion.
- Studies that report on the application of simulation for sustainable dementia care, sustainable care for the elderly, among others.
- Sustainable healthcare supply chains.
- Studies that increase awareness of sustainable healthcare through use of Serious Games in a teaching environment.

Important Dates:

Submission deadline: 1 July, 2013
Publish the special issue : 2014

<OR>

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

OR-30

John Crocker

July 1983

Tom Easterfield recollected the life and death of the Special Research Unit (SRU) at the Board of Trade (BoT) – a case of O.R. minus 30 minus 30 and then some as the events described took place during the late 1940s. The actual origins of this SRU are not entirely clear but it looks like it was set up after discussions between Professor Blackett and Sir Stafford Cripps (then President of the BoT) in spring 1946.

Dr Cecil Gordon served as head of the SRU throughout its rather short life. It would seem that he had been quite successful while serving with Coastal Command and the RAF during the war but his approach appears to have been somewhat less well suited to peacetime activities. It is said that he did not suffer fools gladly and intimated that in his opinion, this left him in a minority of one!

The remit of the SRU was vague. There was little opportunity to meet with potential customers socially (i.e. away from the formality of the office) so there was no effective grapevine. Easterfield points out, 'In the B.o.T., the administrators with whom we had to work had no conviction that we could be useful (the more so because the place had a large number of units and advisers who seemed depressed because their advice was seldom asked for, and more seldom taken)...'.

The Group did manage to do some useful work on Consumer Protection, variety reduction particularly in the cotton industry and the ravages of the clothes moth.

After Dr Gordon left to take up a place at the University of Edinburgh in animal genetics, the department began to break up

and in 1949 when Easterfield and Ronald Stansfield moved on, it finally closed.

Incidentally, this paper was the result of an idea raised by the Editor of *The O.R. Newsletter* for a series of occasional papers on 'Early O.R.'. Unfortunately, Peter Amiry, Editor, *JORS*, does not say who this was although it is interesting to note that Mr R.G. Stansfield was the then Chairman of the Archives Committee.

In the second paper, that I have selected, we move to a paper written by E.F. Wolstenholme and R.G. Coyle on Systems Dynamics (SD) whilst at University of Bradford Management Centre. Their paper describes a two stage procedure in which the first stage is a 'stepwise method of system description...' and the second, 'the application of continuous simulation techniques for quantified analysis to enhance the design of system structures and control rules. They use a series of diagrams which shows the consequences of physical flows of resource levels. These may have positive or negative influences. Each 'resource conversion' is shown as an arrow which describes the consequences of influences arising from each physical flow. For example, if we are converting iron ore into iron then the level of iron ore decreases as the rate of conversion increases whilst the level of iron increases. There are some 21 diagrams which increase in complexity as the paper develops.

Easterfield, T.E., (1983) The Special Research Unit at the Board of Trade, 1946-49, *JORS* 34.7, pp565-568, (jors1983136a.pdf)

Wolstenholme, E.F. and R.G. Coyle, (1983), The Development of System Dynamics as a Methodology for System Description and Qualitative Analysis, *JORS* 34.7, pp569-581, (jors1983137a.pdf)

<OR>

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LEADER

Head to head competition and the role of O.R.

While visiting Toronto a month ago, a friend from university days (Tibor Szandtner, O.R. partner of Ernst and Young) strongly recommended that I read Lester Thurow's book 'Head to Head'. While visiting Halifax last week, another friend from the same era (Peter Wilson, Head of Industrial Engineering at the Technical University of Nova Scotia) drove me to the bookshop to get a copy. I got the message and started it on the way back to Southampton.

The central thesis of the book is captured by its sub-title, 'The Coming Economic Battle Among Japan, Europe and America'. You may be interested to know Europe is tipped as the winner on current form. The central message for present purposes is the transition from competition based on product innovation to completion based on process innovation. To win this competition, in Thurow's view everyone involved in production processes will

have to understand the basics of operational (operations) research. Production processes in these terms include the information systems driving competition in banking and other non-industrial processes.

In my view, this suggests a golden opportunity for O.R. It also suggests lots of scope for missing that opportunity if we do not take proactive steps to capture it. At present there is a lot of doom and gloom in the O.R. community. The day I returned from Halifax we had a Sunday barbecue with a group of O.R. MSc students at The University of Warwick, including my younger son. It is clear many like them may leave the O.R. community permanently unless optimism becomes evident and tangible. We owe it to our profession and all those involved, including our customers, to inject some realistic optimism into our outlook, and make it happen.

By Chris Chapman

<OR>



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MEDIA MODELLING ANALYST

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Our client seeks to recruit a Media Modelling Analyst to supply internal media modelling and analysis expertise to support their media planning and buying across the globe. Working full time on media optimisation you'll be ensuring they are using the right tools and making the right business decisions. Successful candidates will have a min 2:1 numerate degree, ideally supported by a relevant MSc and c2-5 years proven analytical experience with experience of econometric/regression modelling and SAS, SPSS or similar. **Surrey**

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Joining this leading brand, you will be responsible for delivering insight in line with business priorities and designing/articulating insight capacity within a service solution. Experience of delivering statistical analytical projects at a senior level and ideally in a sales environment is essential. In addition to advanced technical skills in segmentation and modelling, the successful candidate will have excellent knowledge of SAS/SPSS/R, advanced macros, regression techniques and CHAID. Strong interpersonal skills and the ability to quickly engage with clients and colleagues is a pre-requisite. **London**

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£40,000 - £50,000 + Benefits

Working for one of most respected brands in the UK, you will be responsible for designing and executing a range of analytical tasks to deliver business insights that will drive revenue growth, reduce business costs and enhance customer satisfaction. You should have an in depth understanding of statistics and predictive modelling (with specific areas of expertise around logistic regression and multiple linear regression) and have experience of using statistical software to produce predictive models. **London**

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

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