

THE SCIENCE OF BETTER AT THE HEART OF ANALYTICS

INSIDE O.R.

FEBRUARY 2015 NO 530

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Your 2015
Training Guide

ANALYTICS IN ENERGY
FORECASTING: ARE YOU UP FOR
THE CHALLENGE?

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PIONEERS IN O.R.

EBOLA

PUBLIC POLICY DESIGN

CORNISH SMUGGLER



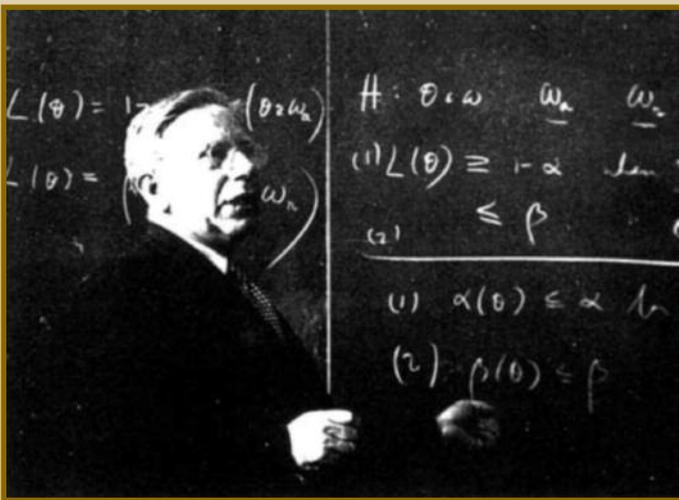
THE OR SOCIETY

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PIONEERS IN O.R.

NIGEL CUMMINGS

How many of us have heard of Abraham Wald, the mathematician who contributed to decision theory, the man who founded the field of statistical sequential analysis and helped to save tens of thousands of flight crew lives during World War II?



I would guess very few of us are familiar with his work, yet Wald features in one of the more enlightening stories from the history of Operational Research. Wald was born on 31 October, 1902 in Cluj, a town which is now a part of present day Romania.

Born into the Jewish faith, he was 'home-schooled' by his parents until college. In 1927, he entered graduate school at the University of Vienna, from which he graduated in 1931 with a Ph.D. in mathematics but discrimination barred him from a university position.

When the Nazis invaded Austria in 1938, Wald took up an invitation from the Cowles Commission for Research in Economics, to work on econometrics research in the US.

During WWII enemy fire was inflicting very heavy losses on Allied bombers. It was not practical to armour-plate the whole aeroplane – it would have made it too heavy to even become airborne, let alone reach its target. It was therefore proposed to apply selective armour. Patrick (later Lord) Blackett saw a report recommending that the armour should be applied to those areas most heavily hit. He immediately countermanded this arguing that because these aircraft had returned, these areas were the least critical and that the armour should be placed where there was little or no damage.

Wald, in an independent study, looked into the available data and concurred that the holes from flak and bullets on the bombers that did return represented the areas where they were able to take

damage. Wald argued that all parts of the aircraft were equally likely to be hit by bullets or shrapnel. If there were areas on returning aircraft that were consistently free from damage then by the laws of probability, these must be the same areas must often hit on those aircraft that did not return and hence must be the most critical, just as Blackett had said. Great minds, it seems, think alike.



Thanks to Wald's recommendations, thousands of bomber crew members were saved throughout the course of the war. Wald's technique would later be summarised quite succinctly as 'Invert. Always invert.' Though it is not known whether Wald had been a follower of the mathematician, Carl Gustav Jacob Jacobi and his earlier work and definition of the Jacobi inversion problem.

Wald also contributed much to our understanding of economics and made major achievements in the field of Sequential Analysis. He was among the first to describe the notion that in some cases it is sensible to observe and analyse data sequentially, rather than wait until one has a sample of predetermined fixed size.

Wald died at the age of 48 alongside his wife, in an airplane crash in the Nilgiri mountains, in southern India, while on an extensive lecture tour at the invitation of the Indian government.

Abraham Wald. b. 31 October, 1902 – d. 13 December, 1950

EPSRC – The next 5 years

Philip Nelson, head of EPSRC plans to make engagement his watchword. He is 'very keen' to ensure an open dialogue between the physical sciences community and the council as it begins to formulate its funding plan for the next five years. To date, he has been meeting with universities and scientific societies to consult on the council's recently released strategic plan.



The council, under Nelson's predecessor, was accused of making decisions without talking to the physical sciences community. However, with a community of around 13,000 researchers 'you have to be practical about it, as it's not always possible to consult with everybody on everything'.

For more on the EPSRC plans, go to: <http://rsc.li/1AuEIMy>

Ballew joins Ford

The Ford Motor Company has hired data science and analytics specialist Paul Ballew for the newly created role of Chief Data and Analytics Officer, to oversee its focus on understanding consumer behaviour and to lead the company's data and analytic efforts globally.



Ford uses analytics widely in its research, product development, manufacturing, supply chain, marketing and sales, finance, purchasing, information technology and human resources functions. Last year, the firm was awarded the INFORMS Prize for its use of data science and predictive analytics. More information about Ford can be found at: <http://ford.to/1u8WV3h>

All change, please

According to an 'outlook' report issued for 2015 by Anand Das, co-founder and CTO of PubMatic, real-time analytics has been



woven into industry over several years, with 2014 serving as a breakout year of sorts; but Das believes that there will be a focus shift as the moves are only the first steps. In the future, he believes we will need more sophisticated visualisations to help us identify partners, trends and outliers in our clients' and customers' data - enabling faster, more informed decision making. Das predicts that 2015 will mark a major shift from descriptive to prescriptive analytics and reporting.

Agree or disagree with this? Why not take a look at his predictions at: <http://bit.ly/1AnByrv>

Mr Das can be contacted via Twitter: @ananddas

Samsung predicts

Samsung's five predictions for 2015 are:

- Computer coding will join the three Rs as a basic skill
- Wearable technology will be adopted by many to create a new era of power dressing for business leaders.
- People will restructure their working lives around personal 'power hours' as technology reveals peak performance times.
- Virtual reality technology and the innovative use of displays will lead to a new generation of digital shops allowing retailers to overcome space constraints and high rent.
- And finally, automated home systems will move from 'geek' to 'chic' driven by a dramatically improved user experience.

Please take a look at: <http://bit.ly/1yk6o9k>

Diagnosing skin cancers

IBM is applying cognitive computing techniques to analyse dermatological images of skin lesions with the goal of assisting clinicians in the identification of various cancerous disease states. This has the potential to increase the number of cases detected and help clinicians make earlier diagnoses.

Memorial Sloan Kettering provided a training dataset containing over 3,000 cases of melanoma, atypical lesions, and benign lesions. This dataset is being used by IBM to train and test a variety of potential algorithms.

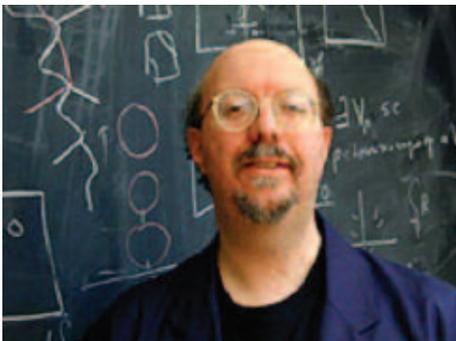
For in-depth information on this topic: <http://bit.ly/1CfIIRW>

Designer antibiotics

In any colony of bacteria there will, inevitably be numerous mutations which, in the normal course of events will simply die out because they are not as well-suited to the environment as their 'stronger' cousins (i.e. survival of the fittest). However, if their cousins are destroyed by a given antibiotic this may allow these 'weaker' mutations to survive and keep the infection going.

Each new antibiotic drug is likely to be effective against a different set of mutations but there is always the chance that it will leave a group of mutants that have not previously been encountered.

Researchers at Duke University led by Professor Bruce Donald (pictured) and Amy Anderson at the University of Connecticut are using a protein design algorithm they developed, called OSPREY, to identify DNA sequence changes in the bacteria that would enable the resulting protein to block the drug from binding, while still performing its normal work within the cell.



From a ranked list of possible mutations, they were able to identify four key factors – tiny differences known as single nucleotide polymorphisms (SNP) that were apparently responsible for the resistance to the given drugs. Experiments with live bacteria confirmed their findings.

OSPREY is open access and freely available to researchers.

More information can be found at: <http://bit.ly/1CfljPf>

Is Maths Irrelevant?

A study conducted by the Australian Association of Mathematics Teachers, the Australian Industry Group and the Office of the Chief Scientist has recognised a basic disconnect between the mathematics taught in the classroom and that used in the workplace. Australia's Chief Scientist Professor Ian Chubb has stated that basic classroom maths is irrelevant and does not prepare students for the workplace.

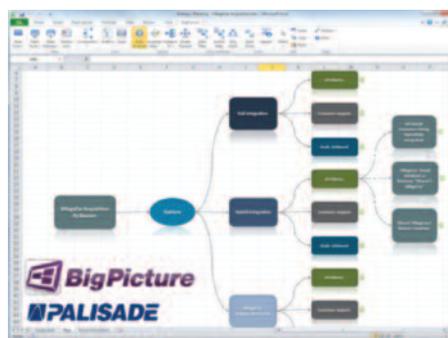
The conclusion is that as maths is at the core of many careers, what is taught in schools needs to more closely align with what is needed in the workplace. Interestingly, a spokesman for the Australian Curriculum, Assessment and Reporting



Authority said, 'Individual schools are best placed to determine how maths content is taught in their school [...] Authorities provide advice [...]'.
 'Work Studies' had been made available this year as an elective Year 9-10 subject aimed specifically at addressing the skills needed in the workplace. For more information: <http://bit.ly/1C7oU3W>

Mind-mapping in Excel

Palisade Corporation has released BigPicture for Microsoft Excel. A diagramming, mind mapping and data visualization tool, BigPicture should appeal to strategic planners, data analysts, human resources professionals and others.



BigPicture is currently available for download in beta version, and is the first and only mind mapping tool on the market based completely in Excel. It allows for the organisation of thoughts and ideas and the creation of 'dynamic topical maps' from any

type of spreadsheet data, utilising mind mapping techniques.

BigPicture can be used for traditional mind mapping and for any free-form diagramming exercise involving the visualisation of abstract problems. For more information please take a look at: <http://bit.ly/1IQqOGs>

Fast but not fast enough

Fast analysis drives actionable insights according to Wikibon's Jeff Kelly, 'It is what creates the business value from Big Data'. This is particularly important for companies that have created entire businesses in areas like advertising technology based on the ability to make split-second business decisions.



Hadoop is good for storing and processing very large volumes of data affordably, but it is becoming too slow for real-time operational analytics. In-line analytics with in-memory databases like Aerospike, DB2 with BLU Acceleration, Pivotal's Gemfire, Oracle's Database In-Memory, and SAP's HANA are thought to be more suitable.

More information on this can be located at: <http://bit.ly/1zr7Jek>

Table arranging at a wedding

SAS have started an O.R. blog. The first piece written by Matthew Galati attempts to minimise the unhappiness of guests at a wedding by using mixed-integer linear programming (MILP).

FIRST PROJECTS

JOHN CROCKER (INTRODUCTION)

This series was initially the brainchild of Louise Maynard-Atem, editor of the Y2OR section. There are a lot of members of the OR society who have made their careers out of O.R. starting in what is sometimes referred to as its 'golden era' when almost every large organisation in this country had its own group, or even, group of groups. It is hoped that this series will, over the next few months or years, capture some of the work done and hopefully, the excitement of that period.



Jeff Griffiths

Queuing for life

Jeff Griffiths

Following graduation, my first appointment was as a Research Officer in the O.R. Department of the Steel Company of Wales (SCOW) at Port Talbot. The O.R. group was one of the largest in UK at that time, with about 70 graduates employed. Little did I know that my first project would be instrumental in formulating my whole career over the next 53 years.

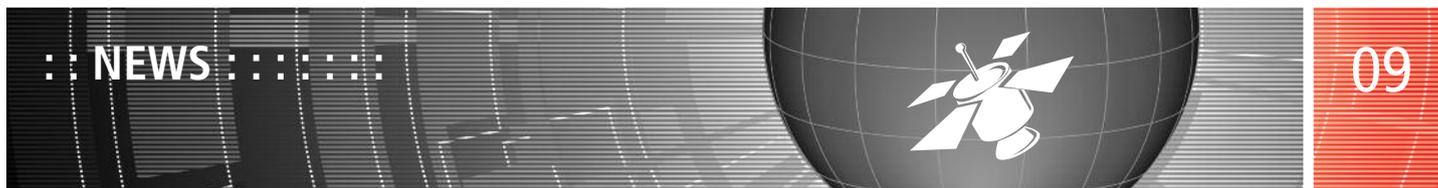
My initial degree was in Mathematics, but the syllabus was very much orientated to abstract and theoretical concepts. Consequently, on graduation, my mind was full of topics such as so-called 'existence theorems' in differential equations (meaning I

could show whether or not a solution to a differential equation existed), but somehow the course never came round to showing us how to actually find the solution. In other words, when I arrived at SCOW I was completely useless when confronted with any real-life problems.

My first project was a major study into the queueing problems experienced by shipping in their attempts to unload their cargoes at Port Talbot harbour. These cargoes were mainly iron-ore, with occasional ship-loads of coal. This problem was to occupy much of my time over the next three years. Initially, there was a major difficulty - I knew absolutely nothing about queueing theory. In fact, I didn't even know that there was a theory in existence which analysed queues and waiting times - but I soon learned what it was all about! I was lucky that my section leader, Dr Eric Page, was something of an expert in the subject, and I rapidly devoured every morsel of queueing theory that he threw my way. This was marvellous - the differential equations which model queueing systems were similar to the ones I had met in the Mathematics course I had struggled with at university, but the big difference was that I was now able to concentrate on methods of solving them.

With regard to the real-life problem which confronted me, ships had to enter the harbour at the steelworks via a set of lock-gates. However, the lock-gates were only accessible at high-tides, which led to long queues of ships waiting out at sea in the vicinity of the harbour. Substantial penalties, called demurrage charges, were levied on SCOW if an arriving ship was delayed for longer than a certain time before being able to unload its cargo. Although SCOW tried to schedule the arrival of ships to avoid bunching, the journey times from distant countries (such as Australia, Venezuela, etc.) were somewhat unpredictable (bad weather conditions, engine breakdowns, steering problems, mutinies of the crew, etc.). The problem was therefore not deterministic in nature - my first introduction to the world of stochastic processes.

Besides the mathematical aspects of the O.R. investigation, it was decided that I should gain hands-on experience from the shipping viewpoint of the loading and unloading of iron-ore. I was elated (initially!) to learn that I was to board an iron-ore carrier bound for Narvik in Norway, one of the most northerly towns in the world,



lying about 140 miles within the Arctic Circle. Narvik's Kiruna iron-ores are exported to many countries in addition to the UK. Although I realised that the vessel which was about to be my home for the next couple of weeks would hardly be in the Queen Mary category, I was not prepared for the shock of on-board life on a working iron-ore carrier travelling from South Wales to Norway. Although the North Sea is typically not the calmest of oceans, it had obviously saved its worst efforts especially for me; indeed, the master of the ship told me it was the roughest trip he had experienced in the last decade. So, I couldn't wait to arrive at dry land at Narvik. Again, bitter disappointment! Narvik turned out to be a dreary freezing town, where the main activities were centred around the iron-ore mines and organisation of cross-country skiing events. The grime of the steelworks town of Port Talbot seemed like paradise in comparison.

After working on the queueing problem for about 18 months, it became apparent that very little improvement could be made to the existing facilities at the SCOW harbour. In addition, SCOW was implementing a large expansion of its steel making capability, which in turn would require additional imports of iron ore. The lock-gates were too narrow to allow large ships to enter, and even if the lock-gates were enlarged, queues would still be apparent, since there was not enough depth of water to allow ships to enter the harbour at low-tides. I decided that drastic action was required. When I gave a presentation of my findings to senior management, to my great surprise (and joy!) they agreed with my recommendation – close the existing harbour and build a new tidal harbour out into the ocean. The management took the courageous decision to build a tidal harbour (at enormous cost) to accommodate ships of up to 150,000 dead-weight tonnes (dwt) - at that time it was the only port in UK capable of accepting dry-bulk

vessels of over 100,000 dwt. The new harbour took 4 years to construct, with the main breakwater over 1.5 kilometres long, and the unloading jetty 0.5 kilometres in length. The harbour was officially opened by the Queen in 1970.

The final part of my project was to decide on the size of the transporters (cranes) for unloading the iron-ore. This was a typical O.R. project, where the need was to balance the cost of providing large unloading capability and hence smaller queues of ships (with the associated lower demurrage penalties) against smaller transporters giving lower unloading rates but with higher demurrage costs.

So, that was my introduction to the exciting world of O.R. I moved to academe after three years at SCOW, by this time firmly hooked on the joys of queueing theory – sad isn't it! For the following 50 years I have had the pleasure and privilege of investigating some of the most important queues in the world – shipping queues in the Suez Canal, queues at toll booths at major bridges, activities in intensive care facilities and A&E departments, delays at traffic lights and pedestrian crossings, congestion on motorways, etc. and it all stemmed from that first project.

<OR>

Many of us, of that certain age, will remember our first projects more accurately and in more detail than their last ones. All of the contributors to this series, so far, have said how much they have enjoyed writing these articles so, if you are of that age, please and would like to have your first projects recorded for posterity, please get in touch. (Editor)

CONFERENCE NEWS

EVENT:	Beale Lecture 2015	DATE:	26 February 2015	VENUE:	Midland Hotel, Manchester
EVENT:	Annual Analytics Summit 2015	DATE:	29 April 2015	VENUE:	BMA House, London
EVENT:	EURO2015	DATE:	12 (welcome), 13 – 15 July 2015	VENUE:	University of Strathclyde, Glasgow
EVENT:	YoungOR 19	DATE:	22 – 24 September 2015	VENUE:	Conference Aston Marketing Suites, (CAMS), at Aston University

O.R. IS NOT JUST FOR LIFE

NIGEL CUMMINGS

At the annual O.R. Careers Open Day, held in November, there was a diverse selection of exhibitors providing an opportunity for students and other interested parties to consider adding O.R. to their list of life achievements.

It was obvious from the exhibitors and the variety of presentations made at this event, that a career in O.R. could provide stimulation and engagement for all tastes.

In this issue though, we focus on what it takes to be a good O.R. analyst, and in particular, the career so far of Louise Maynard-Atem, who after gaining her doctorate in Materials Chemistry from Manchester University, decided to leave the lab for a career in O.R. Her first position was as an analyst at the Department of Health.



Louise Maynard-Atem

Louise provided a number of presentations at our careers day. The first of these was from her standpoint as O.R. Society Early Careers Advisory Group Chair, and concerned how it was possible for students to enter the world of O.R. and analysis after leaving university. She also made a presentation pointing out some of the merits of opting for an O.R. career in defence at Dstl (where she is currently employed).

She emphasised that it was not a specific requirement to graduate in O.R. in order to become an O.R. analyst, the skills needed could be acquired. She already had a good knowledge of experimental design, problem solving and her analysis skills were suitably honed during her PhD years at university to consider a career in O.R.

Soon after making the decision to work in analysis and O.R., she attained a position as an Operational Research Analyst at the Department of Health (2013), and was fortunate enough during that employment phase to work on many and varied projects involving the use of statistics, simulation, spreadsheet and economics modelling, problem structuring, linear programming and forecasting.

She also had the opportunity to go on secondment to the Pricing Team, Analytical Services - NHS England. This work experience convinced her she had made the right career choice.

Louise emphasised that becoming a successful O.R. analyst was not just a question of walking into a job though, it required a good balance between hard and soft O.R. techniques. 'It is equally important to have a good grasp of hard O.R. as well as a good grasp of soft O.R. because they complement one another very well in the workplace'.

She also said that it was 'essential' to have, 'breadth as well as depth'. Depth was important from the point of view that a successful analyst should be equipped with a number of specific techniques at which they were particularly strong, but the breadth dimension meant that they should also be able to develop a working understanding of a wide range of techniques. This is the 'art of O.R.' – knowing which technique to use.

Versatility was also desirable, as O.R. is a constantly evolving discipline and it is vital to keep abreast of new developments and constantly update one's skill set to accommodate them. If these requirements seemed too daunting to those considering such a career, it was important to recognize that most of this expertise would be gained on the job; 'no one expects you to be an expert in everything, being able to pick up new skills and apply them in an appropriate context was more important'.

(Louise is also the editor of the Y2OR section of *Inside O.R.*).



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Fixed term contract for one year

£28,695 - £37,394 per annum, pro rata

Ranked among the leading business schools in the world, Cambridge Judge Business School is distinguished by the innovative, international and collaborative ethos that makes Cambridge, such a rewarding place to work, discover and learn. The School has ambitious plans for growth over the next few years and we are looking for dynamic, enthusiastic, team orientated professionals to drive the programme for change and development.

The purpose of the role is to support and maintain the University's national and international reputation for excellence in teaching, specifically within the Operations Group at Judge Business School in the areas of Operations Research and Management Science. Contributions may include co-development with faculty of assessment materials such as coursework and examination questions, assessment of coursework and examinations. The role may also involve preparing and delivering tutorials, support of experiential classroom activities, and co-development with faculty of course materials.

The successful candidate will have PhD in Operations Research or Management Science. The candidate will also have skills including basics of statistics, analytics and decision making, financial economics, mathematical modelling and spreadsheet modelling. Experience of teaching and examining at postgraduate and undergraduate level in relevant subjects is also paramount. Experience of UK tertiary teaching and examining, including examination boards in a similar role is also required, as well as strong interpersonal skills and a commitment to make a positive impact in this role.

This position is a part time post of up to 50% of a fulltime post. Please note that due to the nature of the post we will not be able to support applications for a Certificate of Sponsorship for tier 2.

The location for this post is Central Cambridge.

For further details please visit <http://www.jbs.cam.ac.uk/jobs>

Closing date for applications is 19 February 2015.

Expected interview day – 26 February 2015 (to be confirmed)



Learning and Development Programme

Approved courses in O.R. and Analytics

FACILITATION SKILLS

5 March, Birmingham
£490 + VAT for OR Society members

Course provider:
Rachel Bodle

Both beginners and those with some experience can review and practice the skills needed to add value at the interface with clients and other project stakeholders. Use questions to encourage participation and elicit unbiased information and gain enhanced awareness of your own skills and activities to address development needs.

Valuable opportunity for delegates to practise specific skills and learn from supportive peers; (rapport, active listening, facilitative interviewing, handling group dynamics, inquiry, concept mapping, etc); Professional development: facilitation skills are a key component of the interpersonal skills needed for more influential, strategic roles

ESSENTIAL O.R. SKILLS FOR PRACTITIONERS

10 March, Birmingham
£485 + VAT for OR Society members
Hands on course

NEW FOR 2015

Course Providers:
David Halsall and Louise Plewes

You'll learn about the policy development / monitoring/ evaluation cycle, gain an overview of problem structuring techniques to shape requests for analysis and get to grips with the basics of using excel spreadsheet modelling to underpin robust and traceable analysis. You'll get an overview of discrete event simulation and its role in what-if analysis and data presentation methods.

Hands on practical course which should be relevant to a wide number of practitioners; Taught by current GORS practitioners. Highly relevant current topics covered reflecting the current economic environment that most practitioners work in. New area of course provision to fill the gap between formal O.R. routes into the profession and those coming from an analytics/IT background

THE COLLABORATIVE APPROACH TO SIMULATION MODEL BUILDING

10-11 March, Birmingham
£1,190 + VAT for OR Society members
Hands on course
Course Provider
Kathy Kotiadis and Antuela Tako

Anyone who is developing and using discrete event simulation models will benefit. You'll learn the collaborative modelling process and the tools that support this process. Know how to get stakeholders to discuss implementation and engage in searching for the solution.

Develop models to include active engagement with a group of stakeholders; Learn a structured approach to collaborative modelling supported by non-technical paper-based tools; See how to engage stakeholders in the modelling process as this can lead to learning and improved implementation of study findings; Improve rigour and transparency in the collaborative modelling process

ORGANISING AND PRESENTING DATA IN MICROSOFT EXCEL

11 March, Birmingham
£455 + VAT for OR Society members
Hands on course

NEW FOR 2015

Course Provider
Simon Pegg, Holleth Limited

Create professional looking, accurate and dynamic spreadsheets to present data creatively. Learn how to avoid the main pitfalls of spreadsheet design; create useful applications using simple Excel functionality; reduce the time spent analysing data and create more time to make decisions and share your spreadsheets with other users whilst ensuring consistent analysis.

Organise data to facilitate both data input and reporting; Learn techniques to identify data quality issues and to validate data before use; Incorporate form controls (option buttons, tick boxes & scroll bars) into spreadsheets; Build effective visual graphics such as a speedometer and a scrolling list; Learn how to identify data quality issues and to build data entry and storage tables; Build a dashboard that updates dynamically as the user selects display criteria.

IMPROVING QUALITY & PERFORMANCE WITH THE PUBLIC SECTOR SCORECARD

12 March, Birmingham
£500 + VAT for OR Society members
Hands on course

Course Provider Max Moullin

Gain a greater understanding of the topics of quality, excellence and performance measurement and an appreciation of the need for performance measurement to be based on stakeholder needs, the organisation's strategy and process; appreciate the debate on targets in the public sector and the eight essentials of measurement.

Find out about the latest developments in performance measurement; Ensure that performance measures are aligned with service user and stakeholder needs, with the organisation's strategy, and the processes used to achieve it; Keep up-to-date with developments in quality management and be able to advise on developing quality user-focused public services; • Learn how to use the balanced scorecard and strategy mapping

Look out for your 2015 Training Guide in this copy of Inside O.R.

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



EBOLA

NIGEL CUMMINGS

The current outbreak of the Ebola virus which causes a severe and often fatal hemorrhagic fever in humans has so far resulted in over 21,000 suspected cases and 8,386 confirmed deaths (according to a WHO report dated 7 January 2015).

Although it is a Risk Group 4 Pathogen because of its high fatality rate, the fact that the outbreak has been centred in West Africa (Sierra Leone, Guinea and Liberia), it has been very hard to contain. These countries are amongst the poorest in the world. They also have on average, fewer physicians, nurses and hospital beds per capita than 95% of the world's other countries. Only 300 physicians for a country of 6 million people, the average population of each of these three nations, or one doctor per 20,000 residents.

Other African countries such as Nigeria and Uganda are only marginally better than the afflicted regions in West Africa, but research so far indicates this has been responsible for such countries having better control of the epidemic and success in stopping Ebola in its tracks by using quick and effective case isolation and contact tracing to find exposed individuals before they became infectious.

Mathematical techniques have been used extensively to try to map the spread and outcomes of the current outbreak and gain understanding of how it spreads among populations. Last July, a group of scientists from eight research units began holding weekly meetings to develop a mathematical understanding of the Ebola virus outbreak in West Africa. From this, models have been developed which incorporate many interacting factors that might be contributing to the outbreak. These have helped inform public health officials of intervention pathways and the associated decisions to take regarding them.

The only way we can prevent Ebola cases from occurring in the Western world is to help stop the epidemic in West Africa. This means the healthcare community as a whole must unite to accelerate and deploy health care workers and increase the health care capacity in all three countries. Raising the basic living standards of these countries is surely a small price to pay for the improved protection it will give the world against such pathogens.



UNICEF launched a global support campaign aimed at raising money to help in the fight against Ebola. In addition to ongoing research, there is a need for funding to help educate people in these areas into hygienic practices and disease transmission prevention.

If you have any spare funds left over after the Christmas 2014 excesses, perhaps you might consider offering a little support to this most worthy of causes - UNICEF's Ebola appeal. Please take a look at:

<http://www.UNICEF.org.uk/landing-pages/ebola-crisis-donate/?gclid=CMberOu6wMICFXqatAodU0QAtQ&sissr=1>
for further information.

<OR>

Join in the OR Society's social media initiative



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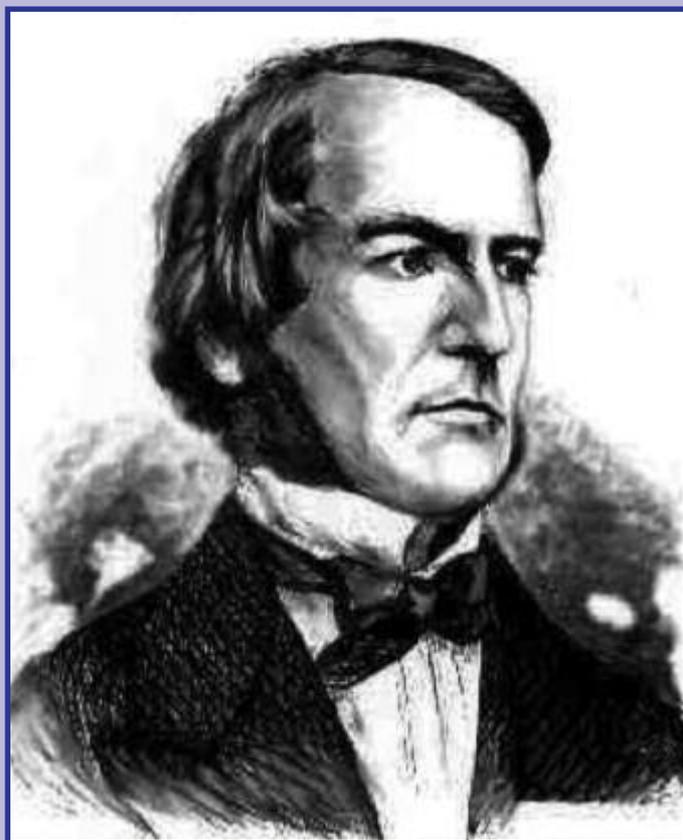
Help in getting started is here if needed:

www.theorsociety.com/Pages/Networking/FollowUs/GettingStarted.aspx

FATHER OF PURE MATHEMATICS

NIGEL CUMMINGS AND JOHN CROCKER

George Boole, born 2 November 1815, died of pneumonia 8 December 1864. Napoleon is reputed to have accused Britain of being a nation of shop-keepers and it is to one of these that Boole was born, coincidentally in the year of the Battle of Waterloo.



Boole was almost entirely self-taught. At the age of 12, his father had his son's translation of an ode of Horace published in the local paper. This proved to be both flattering and humiliating. A classical master denied that a boy of 12 could have produced such a translation but, at the same time, drew attention to a number of technical deficiencies. At 16, he became an 'usher' or assistant teacher in order to try to support his parents. He spent the next four years studying (in his spare time) to become a clergyman which meant adding French, German and Italian to his already acquired Latin and Greek. At the age of 20, his parents' financial position deteriorated which forced him into changing track and establishing his own school. This meant he had to learn how to teach mathematics.

He read *Mécanique céleste* of Laplace (an almost impossible book to understand) and *Mécanique analytique* of Lagrange (a book which contained not a single diagram). From this, he wrote his first paper on the calculus of variations. He discovered invariants without which, the theory of relativity would have been impossible. He submitted some of his work to *The Cambridge Mathematical Journal* under the editorship of D.F. Gregory, who was rather impressed (and subsequently became a life-long friend).

He saw algebra as the manipulation of symbols, not numbers. He realized that the letters did not have to represent numbers and that the symbols could be used to define any operations. From this was born set theory, mathematical logic and, of course, Boolean algebra. Bertram Russell once said that pure mathematics was *discovered* by George Boole in his work *The Laws of Thought* published in 1854 five years after he was appointed Professor of Mathematics at the newly opened Queen's College in the City of Cork (a self-taught mathematician of just 33 and son of a lowly shopkeeper, to boot).

Without Boolean algebra, the world would be a very different place; computers could not function or, indeed, exist. (Much of this history is taken from *Men of Mathematics* by E.T. Bell which was first published in 1937).

2015 marks the 200th anniversary of his birth, and during 2015 he will be honoured by University College Cork (UCC). UCC is organising a major programme celebrating Boole's life and legacy as the 'father of pure mathematics'. To keep track of the events associated with this celebration, take a look at: <http://www.georgeboole.com/>

<OR>

'At 16, he became an 'usher' or assistant teacher in order to try to support his parents.'

YOUNGOR 19 CALL FOR PAPERS!

22 – 24 SEPTEMBER, 2015

Conference Aston Meeting Suites, Aston Business School, Birmingham



Aston Hall

Aston Hall is one of the country's finest Jacobean houses, designed by John Thorpe and built between 1618 and 1635. See the splendour of Sir Thomas Holte's grand state rooms and the stunning oak-lined Long Gallery, now a museum run by Birmingham Museums Trust, it is open to the public during summer.

Abstract Submissions Now Open!

www.theorsociety.com/YOR19

Presentations are welcome on a range of O.R. topics and areas of application including, but not limited to, the new and emerging area of Analytics and Big Data, more conventional hard O.R. and soft O.R. methods as well as new areas such as sustainability in O.R. Application-oriented presentations and case studies in areas such as health and defence are also welcome. Presenters are invited to submit their title and abstract via the YoungOR19 website on www.theorsociety.com/YOR19 as soon as possible.

Deadline for submission of titles, abstracts, full Keynote Papers and Extended Abstracts 12 June 2015!

YoungOR 19 Committee Members

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Vicky Forman
LLamasoft



PROGRAMME SCHEDULER

Priyanka Roy,
Aston Business School



KEYNOTE EDITOR

Oscar Rodriguez Espindola
Aston University



PROGRAMME CO-ORDINATORS

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Cardiff University



EXHIBITOR/SPONSORSHIP ORGANISER

Angelico Fetta



Kuangyi Liu

PricewaterhouseCoopers



Conference Administration

Hilary Wilkes
The OR Society



PUBLIC POLICY DESIGN

ROB SOLLY

The inaugural meeting of the OR Society's Special Interest Group (SIG) on *Public Policy Design* was held on 1 December 2014 at the Society's offices in Birmingham.

This new SIG aims to advance interest in, and the use of, O.R. in improving public policy design at local, regional, national and international levels by bringing together a wide range of interested parties to cross-fertilise ideas and develop initiatives. Membership will be open to individuals and, in order to cultivate an appropriate spread of representation, will be encouraged from interested representatives from the following communities:

- O.R. practitioners from GORS and Dstl supporting UK central government;
- OR Society members supporting local and regional government;
- researchers and teachers in academia;
- other professions that are active in supporting public policy, including designers, social and political scientists;
- those charged with developing public policy;
- those with parallel interests in other European countries and other continents.

The first meeting was well-attended with representatives from most of these communities. Rob Solly of Dstl was elected as Chair, with Jean McLeod of Hunters Moor as Secretary; and John Friend, Ian Mitchell, Cathy Hobbs, Brendan Hickling, Rob Angell, and David Lane were nominated as committee members.

Members had suggested over 20 initiatives but we agreed to focus our efforts by setting up three sub groups, with designated leaders, to pursue three agreed priorities for 2015:

- David Lowe (dalowe@dstl.gov.uk) will lead a sub-group (with Sarah Heard, Eleanor Reynolds and Cathy Hobbs) **to develop and promulgate good practice for O.R. in public policy**

design, particularly to ensure that its recommendations are implemented.

- Ian Mitchell (ianmitch1@gmail.com) will lead a sub-group (with Dennis Finlayson, Jean McLeod and Dan Arthur) working with local government **to apply O.R. to a local development plan**.
- Rob Solly (rcsolly@dstl.gov.uk) will lead a sub-group (with Eliseo Vilalta Perdomo, David Lane, Rob Angell and Jonathan Rosenhead) working with the What Works centres, Behavioural Insights Team or Policy Lab work **to apply O.R. in cross-departmental and local/national issues**.

Could you be interested in contributing to this journey in some way? If so, please contact one of the sub-group leaders directly via their email address above.

In parallel, founder of the SIG John Friend has completed his report on *Starting to Build a Useful Science of Public Policy Choice* in the IOR legacy section of the Document Repository on the OR Society's website. Find it at <http://www.theorsociety.com/DocumentRepository/Browse.aspx?CatID=1>.

The core message of John's report is that people like us have a great deal to contribute to the processes for *shaping* public policies, once we start to grasp the intricacies of local politics, global politics and all the subtle connections in between. That is a lesson that John had to learn the hard way when, fifty years ago, he was one of the first to join a new venture initiated by our OR Society's Council, proclaiming bold ambitions to extend the policy influence of O.R. If you have ambitions to broaden the scope of your own future contributions to important decisions - and if you feel able to resist the allure of Big Data - then please take a look.

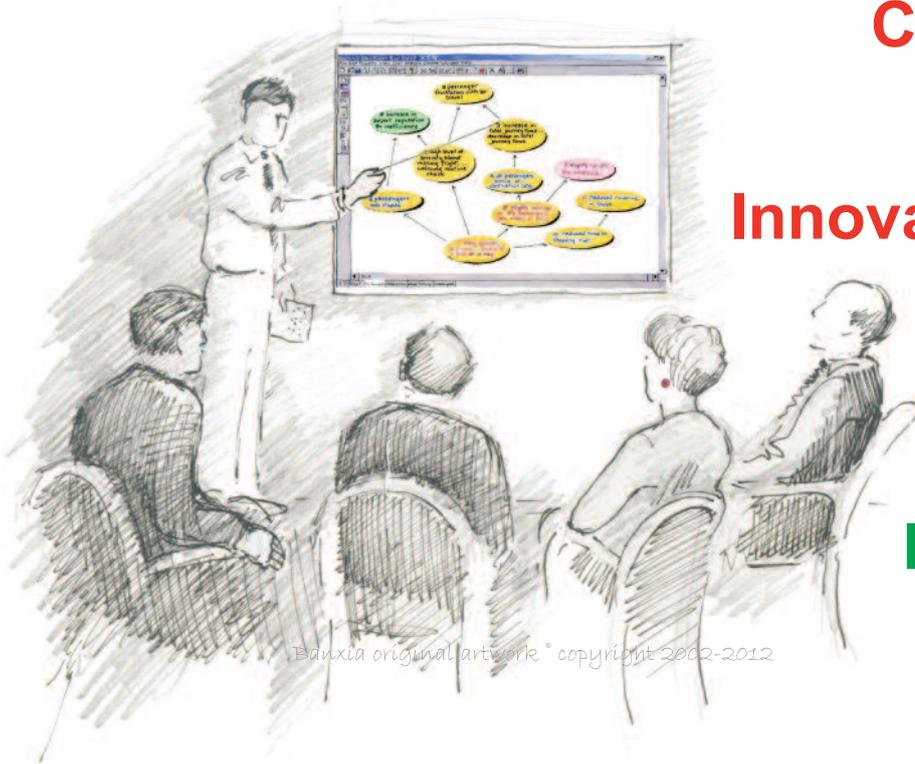
<OR>

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*“Decision Explorer® has proven to be a powerful facilitative tool. Used ‘live’ in workshops it provides a very efficient and productive means of keeping participants focussed and communicating. As a means of joint decision making, I have not found better.” **Kenny Forsyth, Consultant***

- ❑ **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.

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CORNISH SMUGGLER

NIGEL CUMMINGS

Since the company's launch less than two years ago, *Cornish Smuggler* has proved a hit with hard core gamers, families and casual players; it is one of the new generation of board games giving old favourites like Monopoly a run for their money.



Henry Jasper is the CEO of Penzance based Grublin games and the brains behind the highly successful board game *Cornish Smuggler*. At the age of 27 he was accepted at Exeter University to study Maths, Statistics and Operational Research. He then joined a cosmetics company based on The Lizard in Cornwall but after two and half years decided it was time to do something different. During a month's break Henry formulated a plan to apply his scientific skills to the development and promotion of games technologies. He had never made a board game, but he was really interested in the processes involved in developing one. An unusual perspective, as games design usually involves people having an idea for a game, developing it, then marketing it.

Henry had an idea that if he were able to replicate games design processes that had succeeded before, he could be on to a winner. His degree furnished him with the tools he needed to proceed.

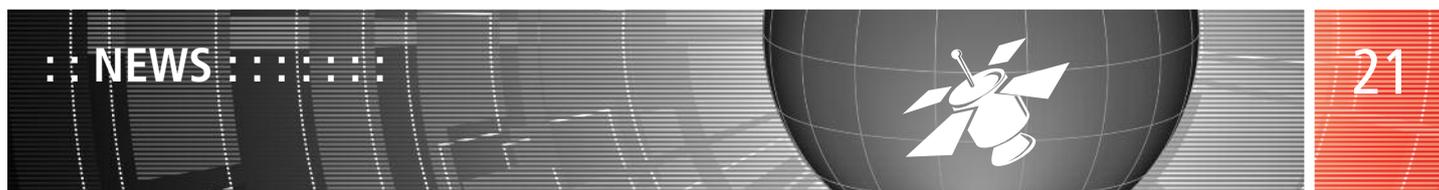
'I was interested in how a board game publishing company would

work. I spent a couple of weeks making an analysis of it and then realised it was do-able.'

This resulted in the launch of Grublin Games Publishing in January 2013, based at Trereife Park Offices, Penzance. Using his maths skills, O.R. techniques, social media analysis and a modern approach to games production and marketing, Henry and his colleagues attacked the global games market and made an immediate impact.

Crowdfunding, that modern day phenomenon, was used to collect financial contributions from a large number of people. This allowed Henry to publish Grublin's first game, *Cornish Smuggler*. He raised almost £31,000 through crowdfunding and a £2,500 investment from Unlocking Cornish Potential.

More information about Grublin Games can be found at: <http://www.grublin.com/about-grublin-games>. Henry can be tweeted via: @GrublinGames.



WANT TO ATTEND YOUNGOR19 FOR FREE?

GAVIN BLACKETT, SECRETARY & GENERAL MANAGER

Simpson Scholarships are designed to enable one or two outstanding young operational researchers to attend the OR Society Young OR Conference, and to encourage them to present papers on their work in O.R.

The scholarship covers the conference registration fee, (including lunches, teas/coffees and other meals) conference accommodation and reasonable travel expenses incurred in attending the conference.

To be eligible you must have been in O.R. for less than 10 years. This period needs to include at least two years' working experience, based in the United Kingdom, of Operational Research in industry, commerce, government, or in a University teaching or research post. In the case of multiple authorship of a submitted paper, all of the authors must meet these conditions, although only one of the authors will receive the award.

To apply please send an extended abstract of the paper which the author(s) intend to present at the conference. You also need to

supply the names and contact details of two independent referees, one a member of the Operational Research Society, the other a client unless inappropriate, who are in a position to testify as to the accuracy of the submission and the fact that the work described was done by the candidate(s). A detailed curriculum vitae is required for each candidate, and in the case of multiple authorship of a submitted paper, the submission must also include a statement detailing the contribution that each author has made to the work described. Submissions should be sent by email to Gavin Blackett, Secretary & General Manager of the Society, email gavin.blackett@theorsociety.com. The closing date is 31 May 2015.

<OR>

NEWS OF MEMBERS

The Society welcomes the following new members,
KAIB CHOW, Canada; KARTHIK IYER, West Sussex; MADELEINE GORKA, South Yorkshire; JON-JACQUES LEWIS, Hants; HEATHER MURDOCK, Hants; RAPHAEL ZOLLINGER, London; CHARLES VINCENT, Peru;

and Reinstated members,
CHARILAOS GEORGIS, London; MORGAN O'NEILL, Hants; JASON YOUNG, Swansea;

and the following student members,
YU TSING FLORENCE CHOW, London; MYLES GARVEY, USA; NADARAJAH GAYATHRIE, Sri Lanka; NATALIE GIL, London; ERIN GILHEANY, Dublin; PETER READER HARRIS, Fife; CLAIRE HEMMINGS, Bristol; SOPHIE HUGHES, Caerphilly; ZHEZHI HU, Coventry; SM SHAHIDUL ISLAM, J Bangladesh; .B KIM, LOUISIANA USA; GUILLAUME LAME, France; SARAH MOHAMED AZHAR, Coventry; MOSTAFA MOMTAZ, Canada; MOLLIE MUSCUTT, Shropshire; ISSAC NIXON, Stoke on-Trent; JAMES OKELLO, Brighton; KAMAL PAL, Wrexham; CHRISTINEA PHILLIPS, Bangor; BENJAMIN ROBERTS, Chester; ALEJANDRA RODRIGUEZ CADENA, Edinburgh; ANDREW ROUNTREE, Chester; HANNAH SCOTT, Hants; KOMAL AQEEL SAFDAR, Birmingham; ISMAILA SALAWU, Nigeria; BEHZAD SEPEHRIAN BAHARY NEJAD, Aberdeen; LE BAO HUONG TRAN,

London; ELIZABETH WALSH, Hertfordshire; MICHAEL WALTERS, Cardiff; HOLLY WATSON, Chester; ROSHAN BAU YONGYA, Cwmbran; RZXKY YUDHA, Leeds;

Total Membership
2718

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)

Admit to the category of Associate (AORS)
Georgios KAPETANVASILEIOU

Admit to the category of Associate Fellow (AFORS)
Edward SEAGRIF, Ruth CARPENER

Admit to the category of Fellow (FORS)
Matthew REVIE

<OR>



IT'S NOT *WHAT YOU KNOW...OR IS IT?*

RUTH KAUFMAN



'It cannot be denied that a great many people who are attracted to O.R., able mathematicians, keen to tidy up problems and sort out messes, are actually rather shy and introverted.'

For the last few years I have been writing occasional leaders in my role as chair of the OR Society's Publicity, Membership and Website committee. I am no longer chair of PMW, having passed the baton on to Jane Parkin, and this is my first leader in the role of President Elect.

I am absolutely delighted to be in this august role, but also slightly surprised – it is not something I foresaw 40 years ago, when I took my first naïve steps into the world of O.R., nor even 5 years ago when I took early retirement and launched into the patchwork world of the self-employed. It crept up on me.

That puts it in the same class as the subject of this leader: the discovery that – rather like Moliere's Monsieur Jourdain, who was overwhelmed to be told that he had been speaking prose all his life – my friendly interchanges with a life-time of co-workers and other random people constitute 'networking'; and my various address-books, scraps of paper and business card collection constitute a 'network'.

I never set out to build a network. 'Networking', I thought, meant selecting contacts according to their usefulness; and using them to gain unfair advantage, via cronyism or nepotism. Unethical, and joyless. However, as I moved through the world of work, I met analysts, other colleagues and customers. I liked (most of) them. I learned from (almost all of) them. I went to the occasional conference or Special Interest Group meeting, and met interesting people. I became involved in voluntary activities and met campaigners, volunteers, beneficiaries, donors. People I knew introduced me to people they knew. It turns out that all this was networking, and that everybody I haven't lost touch with over the years is my network.

'Networking' is what underpins giving, taking and sharing: be it information, opinions, speculations, criticism, advice, perspectives; be it shoulders, to cry on or stand on; heads, two of which are better than one; hands which can be lent; ears which can be bent; brains which can be picked or racked. It supports illumination, innovation, education, for individuals and for the wider community.

All professionals benefit from interchange with other professionals, but arguably it is particularly important for O.R. workers. By its nature, O.R. forces you beyond your own speciality. It calls for multi-disciplinarity – working with people from other professions; for real-world implementation – working with problem-owners and decision-makers; for discovering the business within which your O.R. problem is set; for working on novel projects rather than business-as-usual.

One consequence is that (a) we are often dangerously ignorant but (b) there are usually other people who can spot that – and given half a chance will take great pleasure in putting us right. Another is that sharing information and insights can lead to a whole that is greater than the sum of its parts. An excellent way of opening the door to both those happy outcomes is to get out there and meet people.

That is exactly what conferences are for. Academics and academia tend to be well-aware of this. Practitioners, however, are less so, and their employers less supportive unless there are tangible benefits. That is why the forthcoming EURO2015 will be following the path set by recent OR Society conferences, to include activities intended to directly benefit practitioners: practical case studies, the Making an Impact practitioners' stream, and the chance to develop their own networks.

But there is a problem. It cannot be denied that a great many people who are attracted to O.R., able mathematicians, keen to tidy up problems and sort out messes, are actually rather shy and introverted. We are not naturals at walking up to people we do not know and introducing ourselves. We are also self-deprecating souls,

who do not wish to impose on a stranger's time and find it hard to know what they might see in us. We may even be optimisers, keen not to waste time with people who we find dull and uninteresting.

To address this, we have introduced 'Speed networking' at recent OR Society conferences, and will be running it again at EURO2015. Speed networking is safe; fun; and above all *inclusive* so that everyone gets a chance to be welcomed into the professional community. For more information about speed networking, and EURO2015 as a whole, go to www.euro2015.org

Of course, you can simply leave your professional interchanges to chance, and allow them to accumulate as you wander through life. But also, you can give fate a helping hand, and speed the process up a bit, by coming to the conference.

Returning to the title of this leader: certainly, a lot of what I know comes from courses, books, websites, journals... But a lot of what I know – indeed, the deepest wisdom, the widest variety, the greatest stimulant to reflection - comes from who I know. If that includes you: thank you!

<OR>

OPERATIONAL RESEARCH AND DESIGN DEVELOPING THE DIALOGUE



Tuesday 10th March 2015
10.30am – 4.00pm
RIBA, 66 Portland Place, London



Any O.R. professional knows that clients often want support not only on *decision* analysis but also with the *design* of systems or processes. Do we know enough about the tools and skills of design? Last year, to explore connections and synergies between the worlds of design and of operational research and to consider how these links might be usefully developed, the OR Society and the Design Society held a successful joint workshop (a report of which can be found in the April 2014 issue of 'Inside O.R.').

The two societies have now arranged a further joint one-day event, featuring a range of presentations from both communities on topics of mutual interest, including some practical case studies. Speakers include:

OR Society

- Robert O'Keefe, Vice Principal and Dean of Management, Royal Holloway University of London
- Martin Kunc, Associate Professor of Operational Research and Management Science, Warwick Business School

- Ian Newsome, Head of Organisational Development, and Matthew Grainger, Principal Business Change Officer, West Yorkshire Police, and Giles Hindle, Senior Lecturer, Hull University Business School
- Rob Solly, Senior Principal Analyst, DSTL

Design Society

- Claudia Eckert, Professor of Design, Open University
- Chris McMahon, former President, the Design Society
- Alexander Komashie, Research Associate, Engineering Design Centre (EDC), University of Cambridge

Refreshments and a buffet lunch will be provided.

The event is free and open to all on a registration basis. Early registration is advised as numbers will be limited.

To register attendance go to
<http://www.theorsociety.com/oranddesign>

<OR>



LEARNING ABOUT COLLABORATIVE SIMULATION MODELLING

The Collaborative Approach to Simulation Model Building Course

KATHY KOTIADIS AND ANTUELA TAKO



In today's organisations, there is often a need to involve stakeholders in simulation modelling studies, but the technical language puts senior managers off. This course will demonstrate how to involve stakeholders (clients) in discrete-event simulation (DES) studies. If you are interested in learning how to manage and undertake a collaborative modelling approach, this is the course for you. You do not need to be proficient in discrete-event simulation modelling to attend this course.

This 2-day course will cover a range of topics, where you will learn about:

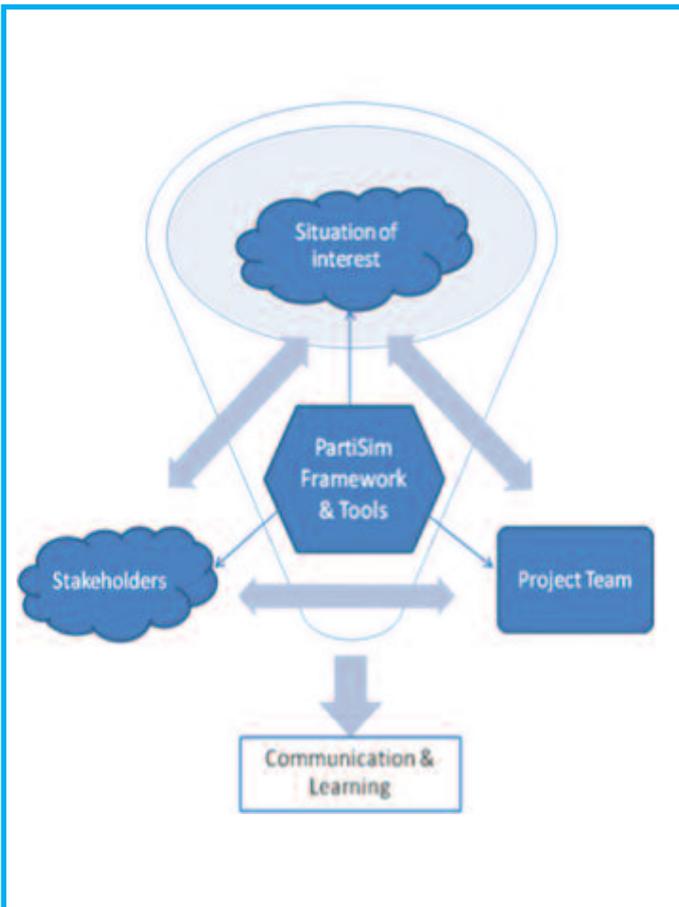
- The collaborative modelling process and the tools to support this process
- How to engage a group of stakeholders in understanding the problem and arriving at common objectives
- Searching collaboratively for appropriate scenarios
- Considering options for implementation in a collaborative way
- The art of Facilitation

Alongside the teaching, we use a case study and exercises to give you a taster of the approach. You will also have the opportunity to develop practical skills in using the tools presented during the course. In addition, we provide a toolbox (a package of documents with our tools and guidance) to support you in undertaking simulation in a collaborative mode of practice in your own organisation.

The topic has been the centre of our research for a number of years. We are exploring how to undertake simulation modelling in a facilitated mode, engaging stakeholders in collaborative workshops that follow a number of steps whilst avoiding technical aspects such as model coding. So far, this new mode for DES has been well received. We have applied our approach in health care and stakeholders have given us very positive feedback as well as going ahead and implementing the findings. Benefits include developing a shared understanding of the problem and enabling a group of stakeholders to actively engage in the process. Also the modelling team feels more supported in the communicative aspects of a study. We found that once we had learnt the approach, the next time we prepared for workshops, we didn't find it very demanding as we had the tools/scripts and guidance and an overall process to follow.

We hope you will consider attending this course and join us on 10-11 March. We are happy to answer any further questions that you may have.

To book on this course contact Jennie at jennie.phelps@theorscoeity.com or 0121 2347818 or go to <http://www.theorsociety.com/Pages/Training/Courses/2015/311.aspx>



We have developed a very structured and guided approach to help a project team (led by O.R. analysts, who may take a modeller and also a facilitator role) involve a group of stakeholders in various stages of a simulation study. The stages span from understanding the problem to discussing the implementation of the findings, where stakeholders are actively involved, by exploring alternatives, rating options and agreeing a feasible plan of action.



THE ANNUAL ANALYTICS SUMMIT 2015 ***FROM DATA TO DECISIONS***

Wednesday, 29 April 2015. 9:00am to 5:00pm

BMA House, Tavistock Square, London WC1H 9JP

Early bird fee including buffet lunch, £95 until 31 March

The OR Society is pleased to be organising the fourth Analytics one day event, in association with the RSS, to showcase how advanced analytics can be the key to better decision making in virtually any area of business.

Over the last 75 years, Operational Research (O.R.) professionals have developed mature methodologies to analyse and use data that can add significant value in big data analytics.



The aim of this event is to demonstrate, by way of case examples, how developments in Analytics are leading to increased competitive advantage.

Speakers will represent a broad spectrum of sectors that can benefit from advanced analytics. Talks will be of general interest, and are intended to raise awareness of applications and techniques, that will inspire delegates to think about decision making in their organisation.

Booking now open www.theorsociety.com/analytics2015

INTERVIEW TECHNIQUES

LOUISE MAYNARD-ATEM

Many thanks to all of you for sending in your solutions to the puzzle I set in the December edition of *Inside O.R.*, they've proved a fascinating read and you've managed to find a lot of different answers. I will publish some solutions after the Getting Hired series ends, so you've still got time to send me your responses on the usual address (lmaynardatem@live.co.uk).

This month Mark Chapman from Prospect recruitment is giving advice on how best to handle interview situations. As usual, if you have any thoughts, feedback or questions (for Mark or myself), then please feel free to get in touch.

Getting Hired – Interview Techniques

Preparation –

Once you've obtained that all important 'Invitation to Interview', the over-riding question to have in mind and to which it is worthwhile consistently mentally referring, is 'Why Am I Attending This Interview?' Rather obvious, indeed, but the answer totally covers the two fundamentals: does the job fit my requirements; do I fit the job's requirements. So:

- Why do I want this job? It is consistently surprising how often candidates fail to think this through, yet convincing and demonstrable motivation towards, and enthusiasm for, the job is absolutely essential to create the right impression. And the only way to fully answer this question is to have undertaken comprehensive research – for example: why this sector; why this organisation is this sector; why this job within this organisation? Then; how are my motivators matched by the job; how does this role fit into my broader career plans etc, etc? With the extensive information available on line these days, you have every opportunity to be totally prepared to answer these questions fully and with conviction.
- Why do I suit this job? Another surprise is how often candidates fail to prepare on 'self'. Do you have immediate recall of all that you've done, when you did it, the background thinking behind it, what it involved, how you did it, what the result was and whether it was a success or failure, and why? If this is the start of your career and you are searching for your first career move, quite possibly, but the further you are along your career path, the more challenging the recollection. The analogy I apply here is to ensure that you conduct a full information download from your mental archives. Go through your CV and recall the answers to all the above questions and any others that occur during that process. That way, everything should be fresh in your mind for the interview and with any luck your mind will not go blank at the crucial moment.

Non-Verbal Communication –

Preparation, and the knowledge it affords you as a consequence, is a great confidence builder. If you know you have plenty of well thought out information on the job opportunity and yourself in relation to it, you will feel good. Also, trust in yourself to be able to deliver on the day. Adrenalin is good, the mind works faster and, if you know your subject, the answers to the interviewer's questions should flow and you should be able to keep any nerves where they belong – underneath the surface. But if you find it impossible to control your nerves – don't worry! It's a perfectly natural reaction to an unfamiliar stress situation and there's no way you're the first person to be afflicted by them – but, again, if you know your subject and have prepared properly, you'll probably find you can work your way through them. You start to feel good about giving good answers to questions, the interviewer offers positive feedback which further encourages ... and success then breeds success! Your body language relaxes, you find direct eye contact easier and more comfortable and your nerves recede. You might even start enjoying yourself!

If you know the name of your interviewer which will usually be included in the confirmation details then it is worth checking out the social media, particularly LinkedIn. Find out as much as you can about them. Quite apart from the obvious value of knowing something about the person you'll be meeting, you can use this information for more specific planning, for example: to contribute to 'ice-breaking' at the start of the interview on the strength of shared interests or experience; how to 'pitch' your approach relative to their level of seniority and position in the organisation; being seen to have prepared well by prefacing a question (for example, enquiring about career development potential) with reference to their progress in the organisation.

Concerning approach and behaviour in an interview, general opinion, to which I subscribe, would suggest that honesty and transparency are best. Quite apart from ensuring that you tackle the interview discussion with integrity, it is just as important that the job is right for you, and vice versa. So if you are trying to sell yourself to be something you are not, there is immediate increased risk of a mismatch. It's equally important (within the bounds of common sense!) to say what you really think, rather than what you perceive the interviewer may want to hear. Invariably, adopting the latter tactic will backfire at some stage.

Whilst on this subject, remember that the interviewer will almost certainly have looked you up on LinkedIn, etc. If you have been dishonest then you can expect to be in for a rough ride unless you are applying to join the Mafia.

How to structure your responses –

STAR (subject; tools/techniques used; approach adopted; results achieved) is certainly a sound approach to structuring answers to questions concerning projects undertaken, work tackled, 'competency based' questions prompting a description of particular work/task undertaken or similar specific questions, but may not be right for all types of question – for example 'career logic' questions, or 'competency based' questions inviting an answer on a particular ability or characteristic. That said, rule No 1 which again, whilst obvious, is something often not adhered to with sufficient focus, is to listen to the question and ensure that you understand exactly what is being asked. And if you don't, as you would in any professional discussion or meeting, ask for clarification. Many interviews are unsuccessful because the candidate '...consistently failed to answer the questions being asked ...'

Concerning how much detail you should provide, don't be afraid to ask as the interviewer will give you some guidance on this. So, in the process of answering, if you become unsure as to the depth required, ask for some 'check & balance' input, for example '... such and such provides a general overview of the project, would you like me to go into further detail on any particular part(s) ...'

You should always try and judge what is behind the interviewer's question. Are they posing a question to assess your problem structuring capabilities; are they seeking to dig deep concerning certain technical skills; are they keen to focus on your broader commercial awareness, business acumen or political savvy; are they trying to understand your behavioural traits in relation to a particular competency?

What to do when you can't answer a question –

The better prepared you are, the less likely you will suffer a 'mind blank' but if you do, simply apologise, explain and move on – it will probably come back to you later (hopefully before the interview concludes!). If you feel you can't answer a question because your experience does not equip you – say so, but offer to answer it as best you can with common sense and an agile mind. Similarly, if you are asked something out of your sphere, explain that it is, but offer to answer as best you can. Some interviewers like to find out where your knowledge runs out and keep on asking ever more probing questions until 'you hit the wall'. If you explain and have a go, you'll accrue points for honesty and determination if nothing else. Also, don't forget the 'product analogy': you are selling yourself, your

capabilities, your experience and your potential; that is what you are and that is what you have to sell – your 'product'. All you can do is sell the product to the best of your abilities – if the product is not what the buyer wants, there is little you can do about it so, provided your 'sales pitch' has been as good as you can muster, there is nothing wrong with not being the right product. And better to find out now, than 2 months after you have started the job!

What questions should YOU ask

The interviewer will often allow time at the end of the interview for questions, but don't be afraid to ask if you may pose questions during the interview discussion, if it feels natural. Some interviews are highly structured, so it is clearly sensible in such an instance to wait until invited to ask. Other interviews are much more informal and a two-way reciprocal dialogue is encouraged, during which it is probably both natural and expected that you ask questions as the conversation progresses.

Concerning what questions to ask – bear two primary approaches in mind: questions that illicit information you are genuinely keen to know; questions that, by their asking, are subtly conveying messages that are designed to impress. So, for example, you might wish to ask about 'what success looks like', 'how it is judged', 'how this impacts on how you are assessed', 'how this feeds into advancement/promotion', 'where I might expect to be in 2 years' time if I exceed expectations', 'where you see the team/department/organisation being in 2-5 years' time' etc.. The clear unspoken message here is that you are motivated, enthusiastic, career minded and keen to commit, which will in all probability score you worthwhile points. Asking about annual leave entitlement, salary levels and what time you can generally expect to be out of work and on your way home, during the first interview, probably won't! The latter information is clearly important, but is probably best left until much later in the mutual assessment process.

If you ask no questions, the interviewer might well doubt your motivation and enthusiasm – and, invariably, a little enthusiasm goes a long way.

Finally, to offer a closing general comment – remember that an interview is fundamentally about human interaction, in which most of us engage every day in one way or another. So plan and approach it as you would in other situations: consider your audience, conduct yourself according to your reading of this, and be **you**, demonstrating who you naturally are – whether that inclines to being introvert, extravert, serious, given to humour etc.. If the 'match' is right, it'll work – if it's not, it probably won't. Which of course is the fundamental object of the exercise.

<OR>

SPECIAL INTEREST GROUPS

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

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

REGIONAL SOCIETIES

LONDON & SOUTH EAST (LASE OR S)

CONTACT:

Sandra Weddell

TEL: 020 7918 4591,

EMAIL: Sandra.Weddell@tube.tfl.gov.uk

or Martin Caunt

TEL: 020 7215 3317,

EMAIL: Martin.Caunt@dti.gsi.gov.uk

Forecasting demand for London 2012 and what really happened then and since

Date/Time: Wednesday 4 February 2015, 18.00 - 19.30

Venue: 25 Gordon Street, UCL, London

Speaker: Sandra Weddell

A meeting with the London Branch of the Institute of Mathematics for those who missed Neil Bichard's presentation on this topic last year. At Harrie Massey Lecture Theatre E28 at 25 Gordon Street (for location information, visit www.ucl.ac.uk/maps)

A presentation on the demand forecasts developed for the London 2012 Olympics and Paralympics. This process covered the London Underground, London Overground and Dockland Light Railway networks, bringing together multiple data sources to represent the overall transport system. With the Games now over, the presentation will also focus on the rare opportunity to use actual data to review the accuracy of a complex forecasting process, and thus highlight lessons to be learned. I will also talk about work we have been doing with the same models since then on major impacting projects.

There will be an opportunity for further discussion after the talk, in the Marquis Cornwallis on Marchmont Street.

No charge is made to attend meetings; non-IMA members are welcome.

www.ima.org.uk/activities/branches/london.cfm.html

SOUTH WALES (SWORDS)

CONTACT: Dr Jonathan Thompson.

TEL: 029 2087 5524 Fax: 029 2087 4199

EMAIL: ThompsonJMI@cardiff.ac.uk

AGM and How do you solve a problem like Analytics?

Date/Time: Wednesday 4 March 2015 @ 17.30-19.00

Venue: Cardiff School of Mathematics, Room M/0.40

Speaker: Professor Stewart Robinson

The next SWORDS meeting of the 2014-2015 programme is scheduled for Wednesday the 4th of March 2015. The meeting, together with the AGM will be held in room M/0.40 at the Mathematics Institute, Cardiff University. There will be drinks available from 5.15pm in the Internet Café which is just inside the main entrance to the Mathematics Institute. The AGM will start at 5.30pm with the talk commencing at about 5.45pm. It will be a joint SWORDS / WORDS meeting.

Contact Jonathan Thompson for more details, tel: 029-20875524 E-Mail: ThompsonJM1@cardiff.ac.uk

Abstract

'Analytics' seems to be everywhere, job adverts abound, companies talk of their analytics capabilities, and the press regularly report on

activities in analytics. Meanwhile, in the O.R. world, our US counterpart, INFORMS, have thrown huge resources at analytics. So how should we, as UK based O.R. practitioners and academics, respond? In this talk I shall reflect upon my own analytics journey which started in around 2006. We shall ask what is analytics? Is it just another fad or something that will stay? And we shall finish by thinking about what this means for us. Come ready to discuss your own ideas on how we 'solve a problem like analytics.'

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

WESTERN (WORDS)

CONTACT: Dr Jo Smedley

TEL: 01633 432573

EMAIL: jo.smedley@newport.ac.uk

WORDS meeting

Use of a Model for Setting an Achievable Public Health Target: The Case of Childhood Obesity in the UK

Date/Time: Wednesday, 25 February 2015 at 18.00 (refreshments are available from 17.30)

Venue: Room 3Q43, Q Building, UWE Frenchay campus, Coldharbour Lane, Bristol BS16 1QY

Speakers: Brian Dangerfield, Department of Management, University of Bristol

Abstract: Amongst the global threats to health facing the advanced economies, obesity is rapidly becoming a prime focus. This is because, in large measure, it is a condition which is a precursor for a range of more serious diseases, including diabetes and hypertension. Interest in a particular condition often results in governments and public health bodies setting targets aimed at reducing the prevalence of that condition in the general population. However, it appears that public health targets are not set by any informed background analysis but rather by what seems reasonable and is tolerable in political terms. In the UK in 2008 the then government announced that it would be striving, by 2020, to bring the obesity metrics back to those prevailing in 2000. Based upon a population-level model addressing the development of overweight and obesity in children (2-15 years), we demonstrate that the achievement of this target (in children) is highly unlikely. The model, which combines knowledge from nutrition, physical activity and body metabolism, shows that a plausible target date would be 2026 at least. Acknowledgement of the delays involved in reversing obesity trends is vital in setting sensible targets in this domain of public health. In general, models have an important role to play in the formulation of achievable public health targets.

OR-30

February 1985

Last month, we carried a report on the 2014 Blackett Memorial Lecture given by Professor Sir Bruce Keogh. A full transcript of the 1984 Blackett Memorial Lecture, 'Blackett and the Origins of Nuclear Strategy', given by Professor Michael Howard, appears in the February 1985 issue of *JORS*. In 1984, Michael Howard was Regius Professor of Modern History, University of Oxford but thirty years earlier he had been given the task of creating the Department of War Studies at Kings's College London. 'With much trepidation I approached Blackett, then an apparently remote and awe-inspiring figure at Imperial College, and invited him to deliver a lecture in an inaugural series which was intended to define and publicize the activities of the new department. The lecture was a great success. Blackett also helped Howard establish the International Institute for Strategic Studies and got Howard enlisted into the British delegation to the early Pugwash Conferences (alongside Cockcroft, Penney, Zuckerman, Bethe, Szilard and Kissinger – to name but a few). Howard watched 'at first hand [Blackett's] development as one of the leading thinkers in this country on the problem of nuclear weapons and the preservation of peace'.

'Patrick Blackett's distinctive contribution to strategic thinking came less from his brilliance as a scientist than from his personal experience of war, and the healthy scepticism which that experience had given him of all theories based upon either unstated or unverifiable hypotheses. Blackett was serving on the *Barham* just astern of the battle-cruiser *Queen Mary* when she was sunk by a single German salvo in the Battle of Jutland (1917). 'When [he] returned to the Services as a scientific adviser in [WWII], it was with the object, as he put it, of 'encouraging numerical thinking and helping to avoid running the war on gusts of emotion'.

Blackett was far from convinced about the merits of strategic bombing during the war or that nuclear weapons would transform the nature of war. He pointed out that some 3 million tons of

ordinary bombs had been dropped by Allied aircraft or roughly the equivalent of 1500 atomic bombs (of the type available in 1945). He also noted that for it to be effective, total command of the air was necessary and that with jet fighters and improved AA, this would be very difficult to achieve. His analysis led him to the conclusion that the USSR needed Eastern Europe as a 'defensive glacis'; that they had rejected the 'Baruch Plan' because it would put them in a permanent position of nuclear inferiority and; most unpopular of all, that Britain should NOT manufacture its own nuclear weapons. 'To do so, he said, would be a dissipation of scarce resources; it would not produce stockpiles on a sufficient scale to be effective; and it would invite Soviet pre-emption against Western Europe.'

In 1961, in an article 'A critique of some contemporary defence thinking' he argued that the models and analysis carried out by the RAND Corporation were based on invalid assumptions and would inevitably lead to 'an endless and increasing arms race'. His conclusion in this article was:

'I have not the slightest doubt that the main danger today is not from the rational act of responsible statesmen, but is due to essentially irrational acts of irresponsible, frightened, humiliated, revengeful, or just mad people – or perhaps, more likely still, from confused actions of well-meaning people overwhelmed by complex circumstances beyond their mental or moral ceiling.'

Space has not really allowed me to do justice to this talk and I thoroughly recommend you read the original in its entirety. The 'arms race' ran for nearly 30 years until it effectively bankrupted the USSR.

Howard, Michael (1985) Blackett and the Origins of Nuclear Strategy, *JORS* 36.2, Pp 89-95 (jors198520a.pdf)

<OR>

OR-20

News

What goes on behind closed doors?

It may be on p3, but it's totally PC

What goes on in the Publications Committee? A question worthy of the expository talent of Max Giddens. The obvious answer, of course, is that the committee reviews the Society's journals: the Newsletter; the Journal, Insight and EJIS. We also keep an eye on the Society's involvement with international Abstracts, though this is an IFORS publication and not a direct responsibility of the Society.

Under supervision

We meet three or four times a year and report annually to Council, who depute a vice president (until the end of last year, Tony Christer) to keep an eye on us. The Committee comprises the editors of the journals (the contributing editor in the case of the International Abstracts) together with the book reviews editor of the Journal; and the commissioning editor of the Newsletter. Harry Holt, the publications director of Macmillan (which we now call Stockton Press) is in attendance, as is Bob Miles, David Smith is secretary and (at least until the next meeting) I am chairman. The Society's president is currently leading a search into my successor.

Appointing new editors

Periodically new editors are appointed to the Society's journals and in the case of the Journal and EJIS, this process is about to be undertaken, again under the leadership of Lyn Thomas.

The short-term concern of the Committee is with the performance of the Society's journals; are they doing the work they were intended to do in a cost effective way? Opinions may differ, but JORS is widely recognised as one of the leading international journals in the field, with a welcome balance of theory and practice, generating considerable income for the Society. EJIS has quickly climbed to a commanding position, perhaps dominated only by MIS Quarterly, and in its first three years has surpassed the expectations of its publishers Macmillan. Insight has been able to publish accounts of O.R. applications written at a level accessible to general managers and has been recognised as a valuable source of case study material.

Concern with finance

The longer-term concerns of the Committee are often indirectly concerned with finance. As the nature of O.R. changes over time, how should this be reflected in the Society's publications? Would it be a good idea to unbundle the Society's two main journals and allow members to choose either of them or would it be better raise

the subscription and send both to every member? (These are not the only alternatives, of course)

Another issue is that of electronic publishing, which Macmillan are monitoring closely. Most academics will be aware of the increasing use of inter-library loan services which has come about, at least in part, through the increasing cost of academic journals. This is only one aspect of what seems to be a trend away from the printed word to electronic media.

Concerned to do a good job

Most academics have had more experience of committee work than they would have wished. I have been fortunate over the three years I have been chairman of this committee to have been working with friendly colleagues whose main concern has been to do a good job as possible. I thank them all.

John Norman

<OR>

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