

Departmental News

Editorial: Upgrading Management Science News to 2.0

Welcome to the Management Science Newsletter. From the next issue we will have a new format, so this is the last issue in the current format. We have decided to upgrade the newsletter delivery options to benefit from the latest available technology – and we hope that you will agree that we are jumping several technology generations ahead.

From now on, our departmental news will be available at the news.managementscience.org, this site is at the moment under construction but you can have a peek what we are trying to do; it will be up and running starting from the first issue next year. You don't need to do anything to continue receiving the good old newsletter as before. But we are sure that you will find more exciting possibilities on the new site.

We call this site Management Science News 2.0 to emphasize the difference between the delivery of news by means of newsletter until now and the Web 2.0 site we are trying to kick off. You will be able, for instance, to generate the form of newsletter that you prefer, including news from many or only a few news categories from our site. You receive this as a pdf file or as a webpage, you can look at it on our site or you can get it into your mailbox or subscribe to it using an [RSS](#) reader. Most importantly, our newsletter is becoming interactive, i.e. you can post your comments to our news. What we would like to achieve is to form a management science community of practice at Management Science News 2.0. We hope you will enjoy the new features but remember, you don't need to do anything to continue receiving news as before. (Viktor Dörfler)

People

John Quigley was promoted to a Reader. Congratulations!

Caroline Sisi temporarily left the department for maternity leave; she gave birth to baby boy Duncan. Best wishes!

Tibor Illés joined the department as John Anderson Research Lecturer. ([see research profile](#))

Abiodun Jagun, Mathew Revie and Zoltán Miklós joined the department as research fellows.

Tricia Ragoobar started her MPhil research with Jason Whalley and David Harle on next generation telecommunication.

David Tracy started his MRes, supervised by Tim Bedford and Lesley Walls; his research concerns human factors reliability.

Jacqueline Barnhart joined the department as secretary to replace Caroline.

Welcome All!

Honours and Awards

Val Belton has been confirmed as [Association of European Operational Research Societies \(EURO\)](#) President Elect from January 2008-2009 and will be President in 2009-2011. Congratulations!

Susan Howick became President of the UK Chapter in System Dynamics Society at the 9th Annual Gathering of the UK Chapter in February in Harrogate. The post lasts for 12 months. Congratulations!

Tim Bedford was a keynote speaker at the Dutch Society for Risk and Reliability Analysis 15th Anniversary Symposium, speaking on "Belief and disbelief in risk analysis", in a wide ranging talk that managed to link risk analysis into postmodernism, politics and even the web's Second Life.

Lesley Walls and John Quigley were awarded the Safety and Reliability Society prize at the Advances in Reliability Technol-

ogy Symposium in April 2007 for the paper with Ian James (Goodrich) on REMM modelling that demonstrated a significant impact of research on industrial practice.

Fran Ackermann won a best reviewer prize at the 66th Annual Meeting of the Academy of Management, Philadelphia, PA.

Jason Whalley was appointed as book reviewer editor for Telecommunications Policy in January.

MBA student supervised by Fran Ackermann won the best dissertation award.

New Courses

The Department launched a new undergraduate principal subject, Business Technology, in October 2007. The course blends an understanding of information technology with the ability to assess when technology is, and is not, appropriate.

Jason Whalley became course director of MCM, Masters of Communications Management, which became the responsibility of the Department. This post-graduate course is sponsored by The Vodafone Group Foundation and Foreign & Commonwealth Office through the Chevening Scheme.

Graduations

Four doctoral students graduated this year: Athena Zitrou and Sarunya Limkeatcherdchoo were awarded a PhD; Tony Thamsatitdej and Rak Vorrakitpokatorn were awarded a DBA.

Matthew Revie has passed his PhD viva with minor corrections.

MMR 2007 at Strathclyde

Tim Bedford (chair), Lesley Walls and John Quigley (co-chairs) with the help of RAs Babakalli Alkali, Ali Daneshkhah and Gavin Hardman and many PhDs from the Department have hosted the 5th International

Conference on Mathematical Methods in Reliability (1-4 July) at the University. Participants were full of praise for the organization, led by Management Science. A whole team of research students joined with Research Staff and lecturers to provide highly efficient team.

The conference brought together almost 200 researchers from Nearly 200 participants from North and South America, Europe, SE Asia, Middle East, India, specializing in operational research, stats, computer science and engineering modelling. Keynote talks included one by Strathclyde's Prof Jim MacDonald on "New reliability assessment challenges in advanced engineering systems", by Michigan's Vijay Nair (see picture) on "Reliability Inference and Predictive Maintenance with Degradation Data" by Alex Whitmore (McGill, Montreal) on "Disaster Risk Management: An Application of Reliability Principles" and by Min Xie (NUS, Singapore) on "Statistical process control approaches for reliability and maintenance modelling".



The meeting was sponsored by Scottish Power, who are involved in a number of different research projects at Strathclyde including one in Management Science on analyzing reliability data. Scottish Power representative Jim Gaw was present to chair some of the sessions.

Visit the [conference website](#) for details and photos.

Bridging the Gap

The EPSRC funded Bridging the Gap programme, led by Tim Bedford from Management Science, has now started operations. Its objective is to stimulate multidisciplinary collaborations, and the first initiatives in this direction have been the University Research Day and a Ross Priory Workshop. Members of

staff from Management Science were involved in both initiatives. The Ross Priory event was themed to look at decision making in space systems, and brought together researchers mainly from Management Science and Computer Science.

On the Research Day a "Dragon's Den"-type took place, where teams competed for funding. John Quigley was part of a successful team who bid to the EPSRC funded "Bridging the Gap" scheme to support exploring the future of trading social risk and responsibility. The team includes Calvin Burns (HRM), George Burt (Management) and Andrea Coulson (Accounting & Finance). The team plan to conduct a series of scenario planning workshops with their £2000 winnings, initially with other Strathclyde academics interested in the area of risk. The team will then engage with the business community to develop tactical decision making tools for social risk problems.

Research Enhancement Initiative

A funding of £8000 was awarded under the Research Enhancement Initiatives scheme to encourage research into the subject of Services Science. The proposal was submitted by Farhad Shafti and Robert Vand Der Meer (ManSci), Umit Bititci (DMEM), John Davies (Psychology), and Erwin Losekoot (Hospitality and Tourism Management).

NASA project

Tim Bedford was a guest at NASA's Johnson Space Centre in April. He discussed potential risk projects with John Turner, Risk Manager of the Constellation project, and met with the NASA Administrator, Mike Griffin. (Picture shows (L-R) Doc Horowitz, Mike Griffin, Tim Bedford, John Turner, outside the NASA Mission Control Centre)



Conferences

Susan Howick organised and presented in the System Dynamics stream at the Operational Research Society conference in Edinburgh.

As Principal Investigator on the EPSRC funded [Manufacturing Futures Network](#), Jill MacBryde helped organise a one day conference on the theme of Images of Manufacturing. The event was held at Cranfield University on 18th October. Speakers from different sectors talked about how manufacturing has changed for them and the new challenges this presents. The event encouraged stimulating debate about the changing nature of manufacturing in the UK and started to put forward an agenda to help address the current problems of attracting talent into the sector in the UK.

Fran Ackermann presented two papers on the 66th Annual Meeting of the Academy of Management, Philadelphia, PA; she also chaired a session and took part in the "Cognition in the Rough" activity as invited Scholar.

Fran Ackermann was co-chair for the Group Decision and Negotiation Conference (May 2007) as well as being on a panel and giving a presentation.

Colin Eden presented a paper co-authored with Fran Ackermann at the 21st Annual Conference of the British Academy of Management.

John Quigley and Lesley Walls attended the ISSAT International Conference on Modeling of Complex Systems and Environments, Ho Chi Minh City, Vietnam and presented a paper on multivariate risk modelling.

Farhad presented a paper on productivity and quality challenges across service sectors at the 1st International Egyptian Conference of Total Quality Management in Service Industries. ([see details](#))

Calvin Burns from HRM presented at the Society of Risk Analysis – Europe Conference in the Netherlands in June on joint work with Lisa Norrington, John Quigley, Kevin Quigley, and Robert van der Meer being conducted on risk analysis of the UK maritime coastguard agency's search and rescue operations.

Viktor Dörfler presented a paper titled "Knowledge Restaurants at the End of the Paradigm" at the VIPSI 2007 Tokyo conference; this paper got a best paper award. Later this year Viktor attended another VIPSI conference in Bled, Slovenia giving a plenary presentation on the role of expert systems in decision making.

Viktor Dörfler presented an interactive paper on evolutionary approach to business creativity on the 66th Annual Meeting of the Academy of Management, Philadelphia, PA.

Viktor Dörfler presented a developmental paper on the systems view in coaching on the 21st Annual Conference of the British Academy of Management.

Presentations, Invited Talks, Meetings

Tim Bedford was an invited speaker at the International Center for Decision and Risk Analysis Dallas Conference on Convergence in Risk Modelling - bringing together financial and technical risk analysts.

Tibor Illés gave an invited plenary talk at the [Joint EUROPT-OMS Meeting 2007](#) in July, in Prague, Czech Republic on "Linear Complementarity Problems: Matrix Classes, Algorithms and EP-theorems". This Meeting was the 2nd Conference on Optimization Methods & Software and the 6th EUROPT Workshop on Advances in Continuous Optimization.

Tibor Illés presented his new results on polynomial solvability of general linear complementarity problems in EP-sense at the [Informs Annual Meeting](#) in Seattle, WA, in November.

Fran Ackermann ran a 1.5 day seminar at the University of Berne. She also gave two presentations at the University of Western Australia.

Farhad Shafti was invited to run a one day seminar on "Performance Measurement and

Corporate Strategy" in The Centre for Technology Development for Power Industry in Iran. The seminar was held on 16th July 2007 in Tehran.

Lesley Walls attended the meeting of Technical Committee 56 of the Electrotechnical Committee in Tokyo in September as a UK expert in reliability analysis.

Workshops

Tim Bedford was a member of the programme committee of the NEST workshop Mathematical Methodologies for Operational Risk held at the EURANDOM Centre in Eindhoven 16-18 April.

Fran Ackermann ran a professional developmental workshop at the 66th Annual Meeting of the Academy of Management, Philadelphia, PA.

Helyn Gould ran an invited workshop on Simulated Professional Learning at the February meeting of the JISC e-learning Pedagogy Experts Group at SAID Business School, Oxford.

Staff research: Dr Tibor Illés

Tibor Illés works in linear and nonlinear optimization and their applications. Linear programming is still the most widely used area of operations research. Hundreds of papers appears yearly in the linear optimization including applications, new algorithms, computer implementations and theoretical results. Currently, the need for applying nonlinear models in solving real-world problems is increasing. Multi-linear optimization problems that link the classical area of linear- and nonlinear programming have been applied to various real-life problems. In the past five years Tibor was the leader of the operations research team at MOL Hungarian Oil and Gas Public Limited Company. His group was working on modelling and computational aspects of production planning of MOL Group. In the past ten years, Tibor and his PhD and master students were working for Hungarian State Railway, Nextent Informatics Plc and IMSYS Ltd on various applications of operations research and mathematical modelling.

Linear programming is not only a standalone research area of mathematical programming, but a widely used technique in approximation of several, structured, nonlinear optimization problems with large variety of practical applications. The usual characteristic of nowadays applications is that they are large scale and complex problems. In solving such real-life problems, usually specialized optimization algorithm need to be implemented. The efficiency of these implementations strongly depends on the chosen building blocks (different numerical procedures). Therefore, not only from theoretical point of view, but from practical necessity, to invent new and more efficient algorithms for linear programming-, linear complementarity problems are of great importance. Tibor has worked on pivot- and interior point algorithms, their complexity and implementation issues for linear optimization. Recent theoretical and algorithmic results of Tibor and his co-authors show that general linear complementarity problems can be solved in the following sense: interior point methods with a given real parameter κ , either solves (in polynomial time, depending on the size of the problem and κ) the primal linear complementarity problem, or solves - in the same manner - the dual linear complementarity problem, or gives a certificate that the matrix of the problem is not in the class of $P^*(\kappa)$ -matrices. Linear complementarity problems are widely used in industrial engineering, management science, economics, game theory etc.

High performance solution methods of structured nonlinear programming problems like linearly constrained concave minimization problems, multi-linear problems, convex optimization problems, semi-definite optimization problems and their nonlinear versions are among the research interests of Tibor. However, he dealt with more theoretical questions of nonlinear optimization like duality theory and alternative theorems of generalized (Ky-Fan, König-) convex optimization problems in locally convex, infinite dimensional vector spaces. His results are published in leading international journals.

Tibor can be contacted at tibor.illes@strath.ac.uk

RF research: Zoltán Miklós

Zoltán's research interest is focusing on Combinatorial Optimization and Integer Programming. He is working on combinatorial optimization problems where good characterizations, min-max theorems and (strongly)-polynomial time algorithms can be given. Some of his central themes in combinatorial algorithms and structures are: network and graph optimization problems with special emphases on paths, trees and connectivity, matchings, matroid and polimatroid optimization, submodular functions and frameworks, partially ordered sets.

Zoltán deals with a new approach - called push-relabel method - that is efficiently applicable for several optimization problems by providing a simple strongly polynomial algorithmic framework. The first application of this method is due to Goldberg and Tarjan for network flow problems. Another famous application is the submodular function minimization algorithm of Schrijver (2000) and Iwata-Fleischel (2003).

Zoltán proved the existence of a cut-tree in directed graphs by applying a new version of the push-relabel algorithm, and he has related results in the complexity and structural analysis of the framework. He and Tibor Illés are working on the theoretical and practical efficiency of combinatorial and pivot algorithms for different problem classes. Zoltán is involved in modelling and analysing applied optimization problems, for example some specific railway optimization problem, and a scheduling problem arising in organising different duties of a given company by optimally exploiting the heterogenous workforce supply of it.

Zoltán can be contacted at zoltan.miklos@strath.ac.uk

Publications

NEW PUBLICATIONS

Fran Ackermann, Colin Eden, Terry Williams, Susan Howick (2007) Systematic Risk Assessment: A Case Study, *Journal of the Operational Research Society*, 58(1): 39-51

- Babakalli Alkali, Tim Bedford (2007) Competing Risks for Power plant Equipment: A Database Analysis, *MMR 2007: Mathematical Methods in Reliability*, Glasgow
- Samaneh Balali (2007) A condition based maintenance model for indirect condition monitoring using Proportional Covariate Model, *MMR 2007: Mathematical Methods in Reliability*, Glasgow
- Zoltán Baracscai, Viktor Dörfler, Jolán Velencei (2007) Ocjena rizika nije upravljanje rizikom (Risk Evaluation is not Risk Management), *Strategijski Menadžment*, 12(1-2): 15-17 [published in Croatian]
- Zoltán Baracscai, Viktor Dörfler, Jolán Velencei (2007) The ES Could Probably Know More - But Man Would Not Make Better Business Decisions, *VIPSI 2007 Slovenia: Proceedings of the VIP Symposia on Internet Related Research with Elements of M+I+T++*, Bled, Slovenia
- Zoltán Baracscai, Viktor Dörfler, Jolán Velencei (2007) The Systems Approach in Coaching, *Proceedings of the Twenty-first Annual Conference of the British Academy of Management*, Coventry
- Zoltán Baracscai, Viktor Dörfler, Jolán Velencei (2007) Business Creativity: An Evolutionary Approach, *Proceedings of the Sixty-sixth Annual Meeting of the Academy of Management*, Philadelphia, PA
- Zoltán Baracscai, Viktor Dörfler, Jolán Velencei (2007) Knowledge Restaurants at the End of the Paradigm, *VIPSI 2007 Tokyo: Proceedings of the VIP Symposia on Internet Related Research with Elements of M+I+T++*, Tokyo, Japan
- Tim Bedford, John Quigley, Lesley Walls (2007) Expert Elicitation for Reliable System Design, *Statistical Science*, 21(4): 428-450
- Filis Bilén, Zsolt Csizmadia, Tibor Illé (2007) Anstreicher-Terlaky type monotonic simplex algorithms for linear feasibility problems, *Optimization Methods and Software*, 22(4): 679-695
- John M. Bryson, Fran Ackermann, Colin Eden (2007) Putting the Resource-Based View of Strategy and Distinctive Competencies to Work in Public Organizations, *Public Administration Review*, 67(4): 605-794
- Alireza Daneshkhah, Tim Bedford (2007) Sensitivity analysis of a reliability system using Gaussian processes, *MMR 2007: Mathematical Methods in Reliability*, Glasgow
- Daosheng Cheng, Tim Bedford, John Quigley (2007) Modelling Subjective Uncertainty in Fault-tree Precursors, *ARTS*, Loughborough: 242-254
- Michael Coen, Helyn Gould, Brian Henderson (2007) Laptops for students: Understanding and evaluating the drivers for change, *Journal of Organisational Transformation & Social Change*, 4(1): 39-55
- Peter Curwen, Jason Whalley (2007) Tele2 and the strategic role of virtual operators, *Info* 9: 55-69
- Peter Curwen, Jason Whalley (2007) Structural Adjustment in the Latin American and African Mobile Sectors, Corporate Governance and International Business, *Proceedings of the 34th Annual Conference of the Academy of International Business (UK & Ireland Chapter)*, London
- Nigel Grigg, Lesley Walls (2007) The role of control charts in promoting organisational learning: New perspectives from a food industry study, *The TQM Magazine*, 19(1): 37-49
- Nigel Grigg, Lesley Walls (2007) Developing statistical thinking for performance improvement in the food industry, *International Journal of Quality & Reliability Management*; 24(4): 347-369
- Gavin Hardman, Michael Goldstein, Philip Jonathan (2007) An inspection planning criterion for large industrial systems, *MMR 2007: Mathematical Methods in Reliability*, Glasgow
- Susan Howick, Colin Eden (2007) Managing Learning in Disrupted Projects: On the Nature of Personal and Corporate Learning, *International Journal of Production Research*, 45(12): 2775-2797
- Susan Howick, Jason Whalley (2007) Broadband adoption: the case of rural and remote Scotland, *Proceedings of the Twenty-fifth International Conference of the System Dynamics Society*, Boston, MA
- Susan Howick (2007) System Dynamics in the UK, *Proceedings of the Operational Research Society Conference*, Edinburgh
- Ian James, James Olatoke, John Quigley, Lesley Walls (2007) Improving Product Reliability through Data Literate Modelling – Methodology and Application, *ARTS*, Loughborough: 332-343
- Tibor Illés, Marianna Nagy (2007) Mizuno-Todd-Ye predictor-corrector algorithm for sufficient linear complementarity problems, *European Journal of Operational Research*, 181 (3): 1097-1111
- Kezang, Jason Whalley (2007) Closing the digital divide: the role of services and infrastructure in Bhutan, *Prometheus*, 25(1): 69-84
- Jillian MacBryde (2007) Design Scorecard: Measuring Design Performance at the Firm Level, *Proceedings of the Fourteenth International Product Development Management Conference*, Porto, Portugal
- Robert van der Meer, Lisa Norrington, John Quigley (2007) The Quantification of a Bayesian Belief Network to Model the Effectiveness of Search and Rescue Operations, *MMR 2007: Mathematical Methods in Reliability*, Glasgow

- Gilberto Montibeller, Valerie Belton, Marcus Vinicius A. Lima (2007) Supporting factoring transactions in Brazil using reasoning maps: a language-based DSS for evaluating accounts receivable, *Decision Support Systems*, 42(4): 2085-2092
- Alec Morton, Fran Ackermann, Valerie Belton (2007) Problem structuring without workshops? Experiences with distributed interaction within a PSM process, *Journal of Operational Research Society*, 58(5): 547-556
- John Quigley, Lesley Walls (2007) Multivariate Reliability Modelling with Empirical Bayes Inference, *ISSAT International Conference on Modeling of Complex Systems and Environments*, Ho Chi Minh City, Vietnam: 141-145
- John Quigley, Lesley Walls (2007) Trading reliability targets within a supply chain using Shapley's value, *Reliability Engineering and System Safety*, 92(10): 1448-1457
- John Quigley, Tim Bedford, Lesley Walls (2007) Estimating Rate of Occurrence of Rare Events with Empirical Bayes: A Railway Application, *Reliability Engineering and System Safety*, 92(5): 619-627
- Ramesh Sachdeva, Terry Williams, John Quigley (2007) Mixing methodologies to enhance implementation of healthcare operational research, *Journal of the Operational Research Society*, 58(2): 159-167
- Diego Ruiz, John Quigley, Lesley Walls (2007) Index Policies for Efficient Reliability Task Allocation, *MMR 2007: Mathematical Methods in Reliability*, Glasgow
- Farhad Shafti (2007) Seeking Productivity, Improving Quality; Challenges Across Service Sectors, *Proceedings of the First international Egyptian Conference of Total Quality Management in Service Industries*, Alexandria, Egypt
- Farhad Shafti, Robert van der Meer, Terry Williams (2007) An empirical approach to service classification for productivity management studies, *Service Industries Journal*, 27(6): 709-730
- Jason Whalley, Peter Curwen (2007) Whatever happened to the Baby Bells? *Minnesota Journal of Law, Society and Technology*, 8(1): 149-173
- Athena Zitrou, Tim Bedford, Lesley Walls (2007) A Bayesian approach for structural modelling of Common Cause Failures, *MMR 2007: Mathematical Methods in Reliability*, Glasgow

NEW WORKING PAPERS

- 07/07** Tibor Illés, Marianna Nagy, Tamás Terlaky, *Polynomial Path-following Interior Point Algorithm for General Linear Complementarity Problems*. [View Abstract](#)
- 07/06** Zoltán Baracskaï, Viktor Dörfler, Jolán Velencei, *The ES Could Probably Know More - But Man Would Not Make Better Business Decisions*. [View Abstract](#)
- 07/05** Zoltán Baracskaï, Viktor Dörfler, Jolán Velencei, *The Systems Approach in Coaching*. [View Abstract](#)
- 07/04** Zoltán Baracskaï, Viktor Dörfler, Jolán Velencei, *Business Creativity: An Evolutionary Approach*. [View Abstract](#)
- 07/03** Peter Curwen, Jason Whalley, *Structural Adjustment in the Latin American and African Mobile Sectors*. [View Abstract](#)
- 07/02** Zoltán Baracskaï, Viktor Dörfler, Jolán Velencei, *Knowledge Restaurants at the end of Paradigm*. [View Abstract](#)
- 07/01** Colin Eden, Fran Ackermann, *The Resources Based View: Theory and Practice*. [View Abstract](#)

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