

NEWSLETTER

December 2004

Operational Research Society of New Zealand, Inc.
PO Box 6544, Wellesley St. Auckland, New Zealand, www.orsnz.org.nz

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Newsletter publication dates are March, June, September, and December. Submissions deadline is the 15th of the month for the following month's issue. Send submissions by email to the Newsletter editor, Matthias Ehr Gott, newsletter@orsnz.org.nz. Acceptable formats are plain text, word, or graphic formats jpg, tiff, and gif. Pdf or postscript documents are *not acceptable*.

Note from the Editor

So here is my second issue. David Ryan comments on the successful annual conference. The People column has a brief portrait of Oli Madsen, one of the plenary speakers at this year's conference. Following on David's comments on his experience with the Review of Operational Research in the UK universities, this issue contains a contribution by Valerie Belton, president of the Operational Research Society, on the subject. The Newsletter now runs Les's puzzle corner. This issue also contains a few calls for papers and book announcements. Ok, these are all from me, but please send me more and I will publish more.

In his last letter from the president, David mentioned the weakness of OR in New Zealand. Maybe the "Workshop on Mathematical Models for Optimization of Transportation Services" organised in Auckland in April next year can provide a new push. With a number of eminent speakers it is a great opportunity for all members to contribute and get some new ideas. Finally, let me mention that Hoare Research Software have agreed to sponsor the newsletter on a continuing basis by printing it.

Matthias Ehr Gott

Letter from the President

As the end of another year rapidly approaches we have the opportunity to review a very successful annual ORSNZ conference and to look forward to our 40th birthday year.

This year the 39th Annual Conference of ORSNZ was held in conjunction with the 9th Annual International Conference on Industrial Engineering Theory, Applications and Practice at the School of Engineering at the University of Auckland. These two annual meetings share a similar objective of bringing together practitioners, academics, scientists and engineers who are working on fundamental aspects of operations research and industrial engineering and the associated applications of the resulting methodologies to practical real world problems. This joint meeting with more than 110 registrations highlighted the practical successes of operations research and industrial engineering in the areas of health care, energy, transportation and forestry.

It was very encouraging to see an increase in registrations for the ORSNZ Conference and especially pleasing to see some familiar faces reappearing from the past. I was going to say old rather than familiar faces but it is a trend I want to encourage so I chose not to say old! It was also pleasing to see some of our past graduates in OR from the University of Auckland attending the Conference. The ORSNZ Conference attracted 53 registrations and a total of 38 papers were presented.

Of particular note were the two Young Practitioner sessions on the Sunday afternoon. Each year the high standard of previous years seems to be exceeded and this year was no exception. Seven excellent presentations were given by Mohammad Babul Hasan from the University of Canterbury and Sanjay Patel, Kavinesh Singh, Martin Young, Matthew Gordon, Timothy Thompson and Sarah Kirkpatrick from the University of Auckland. It was very pleasing to hear comments from various people who heard the presentations and also from the judges about the quality of the work submitted by our Young Practitioners. The judges (our Plenary Speakers, Professor Oli Madsen and Professor Andres Weintraub together with Dr John George) awarded Third Prize to Sarah Kirkpatrick for her paper on "*Better Base Location for the Melbourne Ambulance Service*", Second Prize

to Sanjay Patel for his paper on “*Locomotive Allocation for Toll New Zealand*” and First Prize to Kavinesh Singh for his paper on “*Column Generation for the Capacity-Expansion Planning of Electricity Distribution Networks*”. We extend our congratulations to our Prize winners and acknowledge first the generous Young Practitioner Prize Sponsorship of Charles River Associates and Optimal Decision Technologies. Also a big thank you to the Judges for their careful consideration of the entries.

Two excellent Plenary presentations made another highlight of the 39th ORSNZ conference. Professor Andres Weintraub from the University of Chile, who was making his third visit to New Zealand, is a Past President of IFORS and a winner of the prestigious Franz Edelman Prize for his OR contributions to forestry. Andres demonstrated his comprehensive knowledge of forestry OR in his presentation on *Open Challenges in Forest Modeling and Algorithms: Applications and Methodology*. I couldn't help thinking that in a country where forestry is an important industry, how sad it is that the emphasis on OR modelling has virtually been eliminated from Forest Research activities in Rotorua. By strange coincidence Professor Oli Madsen, who is the Director of the Centre for Traffic and Transport at the Danish Technical University in Copenhagen, was also making his third visit to New Zealand. Oli is well known for his (and his students') contributions to the development of optimal methods for the problem of vehicle routing with time windows and in an excellent talk entitled *The Vehicle Routing Problem with Time Windows – Survey and Recent Developments*, Oli described the approaches that can be considered state-of-the art in this problem area. Oli's presentation was particularly notable in that it illustrated his recently acquired mastery of PowerPoint as a presentation medium.

Another highlight of the Conference, made possible by the combined registrations of both conferences, was the banquet cruise on Auckland Harbour and the short stop and walk on Rangitoto Island. It was a very pleasant evening especially enjoyed by our international visitors.

Finally, on behalf of the Society I want to take this opportunity to acknowledge the work of two colleagues in making this conference such a success. Dr Steve Butt from Western Michigan University (and formerly from the University of Auckland) and Dr Andrew Mason (presently from the University of Auckland!) together were responsible for much of the organisation. Their attention to detail and willingness to accept the extra load and responsibility is much appreciated.

And very finally, I wish all of you a very merry Christmas and happy new year.

David Ryan

ORSNZ Visiting Lecturer Scholarships

ORSNZ invites nominations for ORSNZ Visiting lecturer Scholarships for visits to New Zealand between September 2004 and June 2005. Each Visiting lecturer must give a talk on some topic likely to be of general interest to ORSNZ members at each of Auckland, Hamilton, Wellington, and Christchurch. Each Visiting lecturer will be invited to write a guest editorial for the Society newsletter. The emolument of each scholarship is up to \$1000. ORSNZ will not normally consider payment of additional costs to Visiting Lecturers.

Each candidate must be nominated by a current member of ORSNZ, “the Champion”. The nomination must include the CV of the nominated Visiting lecturer, the date and location of the hosts of the visit, the name of the Champion and an undertaking by the Champion to coordinate a visit by the nominee to the four above named centres.

Enquiries concerning, or nominations for, scholarships should be sent to

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The printing of this newsletter has been generously sponsored by Hoare Research Software.



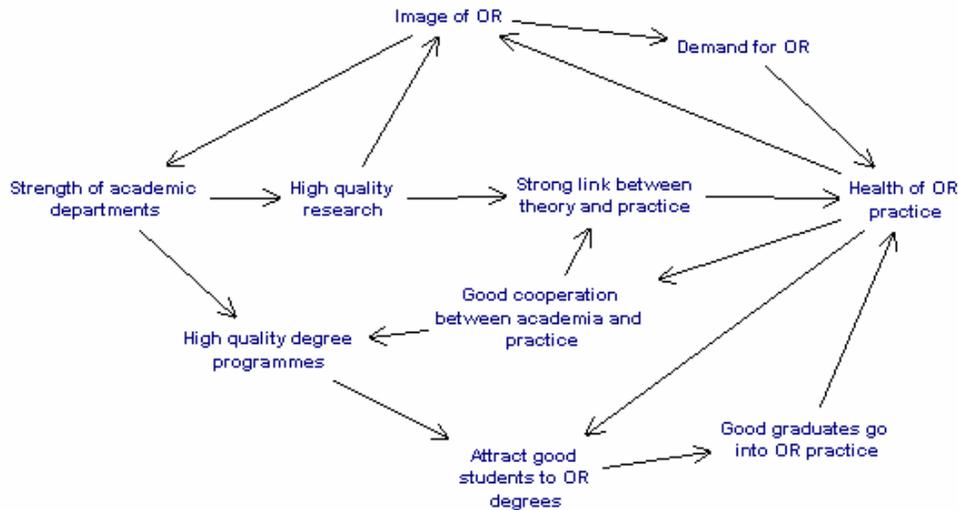
EPSRC International Review of UK-based OR Research – not just a matter for the academics

If the OR “communications network” is working effectively then you should all be at least vaguely aware that this important event is to take place in early March. However, even those who are very aware of aspects of the event may not have the full picture and so I would like to take this opportunity to explain what it is, why it is happening and why I believe it is of significant importance for the whole OR community, not just the research active academic community.

Why is the event important? It is taking place in conjunction with EPSRC’s review of Mathematics and Statistics, but is distinct from the main review (which took place in December) to enable a specific focus on OR and to involve other stakeholders such as the ESRC and the OR practitioner community. As with any such review it presents both opportunity and threat. The opportunity provided to us – to promote the breadth of OR research activity in the UK, to demonstrate the inter-relatedness of different

facets, and to highlight the strong links with OR practice – is unique. Typically assessments focus only on fragments – on individual departments, grouped under headings of “Business and Management” or “Mathematical Sciences” or “Information Systems”. This time it’s different, we can and must paint the big picture which illustrates inter-connectedness as well as individual strengths.

Why is it not just a matter for academics? This is the case in a very immediate way because practitioners are involved as members of the review panel and contributors to discussions on the day. But more importantly the outcome of the day, the judgement of the panel, will reflect on the OR profession as a whole. We are, essentially, a “virtual organisation” and as with any organisation, if part of it is seen to be in ill-health, then the functioning of the whole is affected. The links – actual and potential - between practice and academia are clear, to my mind most effectively communicated visually as in the simple picture below. The feedback from research into practice is both immediate and longer term through the education of graduates, but equally important is the feedback from practice into research.



What form will it take? The main focus of the review is a one day conference, or “theme day”, to take place on 5th March. During this the review panel, chaired by Professor Frank Van Der Duyn Schouten, from the Netherlands and comprising of 4 other overseas academics (David Ryan, New Zealand, Bill Pierskalla, USA, Richard Nance, USA and Denis Bouyssou, France) and 3 senior UK practitioners (Mark Roper, British Airways, Roger Forder, Dstl and Sue Merchant, ex-Metropolitan Police), will have the opportunity to explore current research activity and perceived challenges for the future with participating academics and practitioners. Prior to the day the panel will review the responses received from 27 Universities to a questionnaire seeking information about recent re-

search activity, research strengths and perceived challenges for the future. This information also provided the basis for planning the programme for the day, which will revolve around two poster sessions and accompanying discussions. In morning session representatives from twelve Universities (representing about 70% of the staff, PhDs and research funding indicated by the 26 respondents) will discuss current research with members of the panel. Over a lunchtime poster session and during afternoon discussion groups the focus of the meeting will shift to the key research themes emerging from the responses, in particular the challenges these present for the future. The themes to be addressed are:

- Simulation
- Meta-heuristics and applications
- Healthcare modelling
- Soft OR and Multi-methodological Approaches
- Mathematical Programming methods and applications
- Knowledge Management
- Decision Analysis and Performance Measurement
- Manufacturing and Supply Chain Management
- Risk Assessment and Analysis
- Stochastic Methods, Financial Modelling and Forecasting

Of course, these areas are not distinct, there is much interlinking of ideas and research activity and a real challenge for the day is to ensure that this is communicated to the review panel.

This final comment brings me back to a recurring theme of this article, interconnected-ness and communication. The premise of my opening comment was that we have effective communication networks - I fear, however, that although we have powerful tools for communication, the extent to which we engage with these to create effective networks is limited. How can we build these networks, not only for day-to-day communications, but also to further exploit the synergy and creativity that can be derived from the links within and between different research areas, academia and practice?

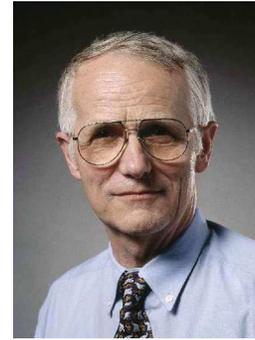
Valerie Belton
President of the Operational Research Society

People

At this years ORSNZ conference we have been very lucky to attract two world class Operations Researchers as plenary speakers, Prof. Oli Madsen from Denmark's Technical University and Andres Weintraub from the University of Chile, former president of IFORS. In this issue Oli Madsen gives a brief description of his career, his research and his institution. Hopefully this will be followed by a similar piece by Andres Weintraub in the next issue.

Oli B.G. Madsen, Centre for Traffic and Transport (www.ctt.dtu.dk)

Oli B.G. Madsen is the director of and professor at CTT – Centre for Traffic and Transport at the Technical University of Denmark (DTU). He obtained his M.Sc. in Electrical Engineering and Operations Research from DTU in 1967 and a Ph.D. in Operations Research from DTU in 1973. In 1998 he received a senior doctorate degree (Dr. Technices) in Transport Optimisation from DTU.



Prof. Oli B.G. Madsen

Professor Madsen was working at the department of Informatics and Mathematical Modelling, DTU before he started at CTT in 2000.

Professor Madsen's main research interests are application of operations research in transport systems, vehicle routing, and crew scheduling. At present he is working on optimisation of multimodal transport systems, optimisation of operations in containers terminals, dial-a-ride and vehicle routing, and yield management.

Apart from working at DTU Professor Madsen has spent a few semesters teaching and doing research at Massachusetts Institute of Technology (USA) and at University of Auckland (New Zealand).

CTT, Centre for Traffic and Transport is one of the 15 departments and centres at the Technical University of Denmark (DTU). The present staff consists of 25-30 employees. From CTT 20-25 students graduate every year with a Master Degree in Traffic and Transport. CTT is focussing on the combined knowledge of engineering, modelling, quantitative methods (including operations research and statistics), society and economics. The main areas of CTT are development of models and solution methods and applications within the following subjects:

- Logistic and Transport
- Traffic and Transport Models
- Geographical Information Systems
- Decision Models and Evaluation Methods
- Traffic Informatics
- Traffic Engineering
- Traffic Planning

It is very important for CTT that the theory, the models and the solution methods are connected and are applied in practice. This is underlined by the fact that around 65% of the CTT budget is financed from sources outside DTU. Examples of recent CTT projects are:

- Dial-a-Ride, Tele-Busses
- Yield Management, Booking, Seat Allocation and Revenue Management

- Vehicle Routing, in Particular Dynamic Vehicle Routing and Vehicle Routing with Time Windows
- Supply Network Optimisation
- Multi-Modal Transport
- The Connection Between Traffic, Location and Car Ownership
- Methods for Estimating Transport Models
- Dynamic Road Choice Models
- Multi-Modal Route Choice Models
- GIS-Based Models for Transport Networks
- Road Pricing, Congestion, and Traffic Informatics
- Train Simulation Models
- Impact Models for Railway Traffic

Chapter News

Auckland News

The biggest news from Auckland has been the holding of the 39th ORSNZ Conference in conjunction with the IJIE Conference. This was a great success. A full report is contained elsewhere in this newsletter. The other conference news is the official notification that Andy Philpott Matthias Ehrgott and David Ryan have been awarded a prestigious NZIMA grant to fund a thematic programme in the Optimization of Transportation Services. This will entail an international workshop to be held in Auckland next April (see www.esc.auckland.ac.nz/Transportation) and will fund postdoctoral and PhD research in this area.

This week we farewell Kevin Wood, who has been visiting the Department of Engineering Science for about 14 months. Kevin returns to NPS in Monterey. Kevin has been able to find time to collaborate on several interesting projects with the locals, as well as pursuing his own research. It has been great having him around.

Finally I report that the usual summer diaspora is upon us. Matthias Ehrgott, Ines Wines, Mike O'Sullivan and Andy Philpott are off to ICOTA in Ballarat on December 8. Cameron Walker heads to California and Scotland on a pre-Christmas research tour and David Ryan leaves for two months research in the Northern Hemisphere. In January Andy Philpott will meet up with Shane Dye and others in Dagstuhl Germany for an international stochastic programming workshop.

Andy Philpott

Canterbury News

The Management Science group at the University of Canterbury is pleased to announce the appointment of two new staff in the area of Operations Management. Dr Pulakanam Venkateswarlu (Venkat for short) re-

joined the group on October 1st after several years working in industry. Venkat's research interests include work on Quality Management and Reliability Theory. Dr Pavel Castka will also be joining the group in the new year. Pavel has been teaching at the University of Salford in the U.K. and was also the Research Manager of the Organisational Learning Centre (Europe). His research interests include work on Quality Management Systems and Corporate Social Responsibility.

In July John Raffensperger attended the INFORMS First Annual Teaching of Management Science Workshop. Here are some of the key points he picked up from the two plenary sessions of the workshop presented by Chris Jernstedt, a psychologist, on the brain and cognitive aspects of learning:

- *The brain has three key systems related to teaching: social, emotional (relevance), and cognitive. Good teaching should use all three of these systems.*
- *The key is to engage the students. Encourage them, even if they are wrong. Feedback should be **consistent and rapid**, easy to interpret, and positive.*
- *Right after learning, the brain needs to be left alone to consolidate, like gelatine. Teachers should program time for consolidation. At a minimum, modulate the load during class. We need a break! Stories are very good, because they have a low cognitive load and high mnemonic value, and feel relevant.*
- *Performance has zero correlation with study time, but performance has high correlation to study style. Practice should be 40% to 80% of the learning time. The more practice, the better.*
- *The typical student learns the same amount by attending lecture as by reading a transcript of the lecture, but reading the transcript is more efficient. Jernstedt showed a graph with two bars at 10% relative exam score. If students attend lecture and have a written handout, or attend lecture and have written examples, the relative exam score is 20%. If the typical student attends lectures and then makes a handout himself, the relative exam score is much higher, something like 40%, because he engages with the material.*
- *Cooperative structures for learning: team, individual, competitive. **Across all ages and all subject matters, cooperative > individual = competitive.** Heterogeneous groups \geq homogenous groups.*

John found this workshop to be very useful and strongly recommends it to anyone who has the opportunity to attend. The next one is on 28-31st July 2005 in Lake Bluff, Illinois. See <http://www.informs.org/Edu/TMSWorkshop/TMS05/index.htm> for details.

Ross James

Wellington News

We have had a very quiet year as far as ORSNZ meetings are concerned. We started the ORSNZ year with a talk planned by Russell Cheng, which had to be cancelled, and then David Boland stepped down as the Wellington Branch Chairperson for family health reasons. We have missed David's usual reminders to organise meetings, and so it turns out we have had no formal meetings this year, and for that we offer our apologies to the Wellington OR members. Reflecting on this oversight makes us appreciate all the more the great job that David did in getting meetings onto our agendas.

But that doesn't mean we've been idle – we have been very busy doing other things. Some branch members have changed jobs, and those we've spoken to and heard from seem to have been busy doing good work. One of our well-known members, Hugh Barr, has just completed a term on the Wellington Regional Council (hmm, ... sounds like a good talk topic for next year?).

We have had an exceptionally busy year with our teaching and supervision at VUW with course sizes continuing to grow, and numerous research students choosing to do theses and research projects in our area. We were very fortunate to have Professor James Cox from the University of Georgia here for the first trimester, which provided us with an ideal opportunity to work alongside one of the top Theory of Constraints (TOC) experts in the world. We engaged in various research projects with Jim as well as making use of his expertise in teaching our MBA's and with supervising student projects.

John Davies and I have just returned from the Decision Sciences Institute's 35th Annual Meeting in Boston, where we presented an invited colloquium (on combining methods from OR/MS, TOC and other systems methodologies) and a joint paper with Jim. The timing of the DSI meeting clashed with our own ORSNZ conference unfortunately, but provided a valuable opportunity to meet and hear colleagues from around the world and across the range of Decision Science disciplines, not only OR but also areas such as operations management, project management, manufacturing, services, quality, marketing, information systems, and knowledge management. There were over 1400 participants at this conference – mostly from the USA, but also from UK, Europe, Asia, Australia, SA. There were special sessions on innovative methods for teaching the various topics – especially in operations management and project management.

Bob Cavana, Arun Elias (also at VUW) and I went to the Systems Dynamics conference in July, each presenting papers on various aspects of using systems dynamics (as popularised by Senge). Arun was awarded his PhD during the year for his work in this area applying stakeholder analysis and systems dynamics to the issue of Transmission Gully. My paper

was jointly with Jim Cox and John Davies, and described an application using systems dynamics' causal loop diagrams combined with TOC.

Next year, we expect to have Lyn Thomas from the UK visiting us, and we do intend to organise more meetings. Victoria Management School is willing to continue to provide modern and convenient meeting facilities at its downtown location at the new Pipitea Campus. The committee (presently John Davies, John Hayes and myself) welcome suggestions from any Wellington members who would like to join the committee, or who have suggestions for speakers and/or topics. We've already been asked to do some talks on what the staff and students at VUW have been up to, but we'd love some industry speakers too, so please get those ideas in to us so we can take action.

*Vicky Mabin, Associate Professor, Victoria Management School, VUW
On behalf of the Wellington Branch*

Waikato News

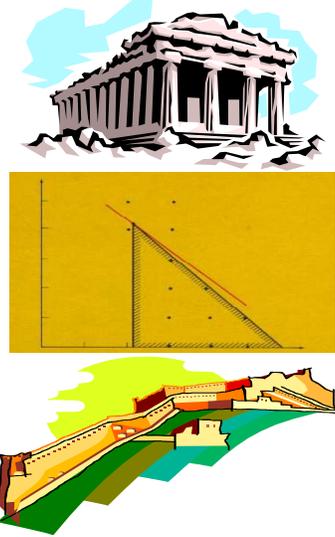
CHUDA, JIM, AND LES GO A-GALLIVANTING

Chuda Basnet is back from nearly three months of study leave spent at the Loughborough Business School in the UK, at the University of Applied Sciences in Neu Ulm, and at the University of Muenster, the last two in Germany. At the last location Chuda was close to the Austrian Alps, where he enjoyed wandering in the Tyrol area.

Jim Corner and Les Foulds (both ORSNZ Council members) recently made a triumphant return from a world tour of Singapore and Perth. In the former, they attended an international conference on manufacturing management and presented a paper on sustainable grain logistics. Other highlights included the rock opera, "Mama Mia" - great if you're an ABBA fan, slurping gins sling at the Raffles Hotel, and being issued with top-to-toe gowns to enable entry to the mosque near Arab Street. In Perth they visited the University of Western Australia Business School, frolicked with feral kangaroos, and went wild in Fremantle with Jim's newly-acquired digital camera.

All-in-all, most pleasant and productive trips.

Les Foulds



Two OR specialists P and S, attended the Olympic Games held in Greece earlier this year. On the flight to Athens they were grappling with a two-variable IP problem which they were forced to tackle with only pencils and paper. Upon examining the multitude of complicated constraints, it was clear that the optimal solution comprised two integers, each between 2 and 99, inclusive.

Upon arrival, getting into the spirit of the local culture, they each secretly visited the Oracle at Delphi. The Oracle told P alone only the product of the two integers. Later, the Oracle told S alone only the sum of the two integers. Soon after P and S, who are both truthful and rational, met and mentioned to each other that they had each visited the Oracle. P admitted to S that the Oracle had divulged the product. S admitted to P that the Oracle had divulged the sum. Neither revealed to the other the actual value told by the Oracle. Their further conversation went like this”

P “I don't know the two integers”.

S “I knew you wouldn't know them”.

P “I now know the two integers”.

S “So do I”.

What are the two integers and why are they unique?

Source: Paul Childerhouse, University of Waikato, former Treasurer of ORSNZ.

Les Foulds
lfoulds@waikato.ac.nz

OR Spectrum - Quantitative Approaches in Management

Special Issue on *Biomedical Informatics and OR*

During the past decade our society has rapidly grown into an information-driven society. Information breeds new theory, methods, and technology for creating and measuring success. Biological and medical data are of particular importance in that they can lead to discovery of knowledge that can help us better understand and deal with our life and nature.

Biomedical informatics is a relatively new and emerging multidisciplinary research area that can generally be defined as the application of mathematical, statistical, and computational tools in analyzing biological and medical information. With the advances in genetic and medical research producing a vast amount of information everyday and supported by the advent of powerful computing hardware, OR today finds itself potentially, if not already, playing a significant role in advancing biomedical informatics: OR researchers have created ‘mathematical, statistical and computational tools’ for practical problems and can apply and develop theory, models, and algorithms for better solving questions and meeting challenges posed by biomedical informatics research today.

This special issue of *OR Spectrum* will provide a forum for timely and in-depth presentation of the state and opportunities of OR research in the emerging research field of biomedical informatics. Specifically, we solicit high quality and **practical** contributions on development, use, and application of OR theory, models, and algorithms for biomedical problems. Topics of interest include (but are not limited to):

- Comparative genomics
- Gene expression analysis and identification
- Microarray design and prediction
- Phylogenetics
- Pharmacogenomics
- Protein folding and structure prediction
- Protein identification
- Disease studies
- Medical diagnosis and prognosis
- Cancer treatment
- Models of epidemics
- Reviews and pilot and case studies

Submission Guideline:

Submit your paper via e-mail (pdf or ps format) by **December 1, 2005** to one of the two special issue editors. The submitted papers must not have been previously published or be currently under consideration for publication elsewhere. All papers will be reviewed according to the standards of *OR Spectrum*.

The format of manuscripts for *OR Spectrum* can be found in "Instructions for Authors" page of the journal on <http://www.or-spectrum.de>.

Please feel free to contact the editors with any questions.

Important Dates:

Submission Deadline: December 1, 2005
Author Notification: June 1, 2006
Camera-ready Due: October 1, 2006
Target Publication Date: January 2007

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OR and Bioinformatics
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MCDM and Engineering

OMEGA - The International Journal of Management Science

Special Issue on
Multiple Criteria Decision Making for Engineering

Rapid technological and economic growth over the last fifty years has changed human lives and made modern society face complex decision making problems. In the present world, people have to deal with urbanization and industrialization, increase of water and energy demands, environmental pollution, shortage of natural resources and food, and many other challenges. These problems necessitate the development of a multidisciplinary approach for analyzing diverse mechanisms and consequences of modern civilization. Multiple criteria decision making (MCDM), as a subfield of systems engineering and science, has become a modeling and methodological tool for dealing with complex engineering problems. The development of MCDM models and methods has been motivated not only by a variety of real-life problems requiring the consideration of multiple criteria,

but also by the scientists' and engineers' desire to propose enhanced decision making techniques using recent advancements in mathematical optimization, scientific computing, and computer technology.

This special issue will bring together scientists and engineers working in the area of MCDM and will address the impact that the MCDM paradigm makes on science and engineering. We welcome articles presenting real-life applications and case studies that will report on new methods developed *for and within* engineering disciplines including mechanical engineering, electrical engineering, environmental engineering, chemical engineering, civil engineering, industrial engineering, bioengineering and others. We encourage submissions not only by engineers applying MCDM within their disciplines but also by researchers from other academic areas who are eager to demonstrate potential of MCDM for use in engineering. Although the proposed techniques may use advanced mathematical models or procedures, the papers will target readers without rigorous background in engineering mathematics and will emphasize the applicability and relevance of those methods rather than their derivation and origination.

Topics include but are not limited to:

- Applications of MCDM in the areas of energy and environment, transportation, production and materials, communication, and sustainability
- Web-based applications
- Managing performance and affordability
- Managing risk and uncertainty
- MCDM with multiple scenarios
- MCDM with black-box functions
- Modeling preferences
- Imperfect knowledge: sensitivity and robustness analysis
- Complexity issues

Submission Information

Manuscripts should be electronically submitted directly to the guest editors (acknowledgement will be sent upon receipt).

- Margaret M. Wiecek, Department of Mathematical Sciences, Clemson University wmalgor@clemson.edu
- Matthias Ehrgott, Department of Engineering Scienc, The University of Auckland m.ehrgott@auckland.ac.nz
- Georges Fadel, Department of mechanical Engineering, Clemson University fgeorge@clemson.edu
- José Figueira, Faculty of Economics, University of Coimbra figueira@fe.uc.pt

Submit one copy in pdf format with author names, affiliation and contact information. Submitted papers should not have been previously published nor be



currently under consideration for publication elsewhere. Refereeing and the selection of papers for publication will be carried out according to the standards of Omega. Authors should consult the instructions for authors section at:

<http://www.omegajournal.org/authors.html>.

The **submission deadline is January 31, 2005.**

The special issue is scheduled for publication early in 2006. **OMEGA**

New Books

M. Ehrgott and X. Gandibleux (editors)
Multiple Criteria Optimization – State of the Art Annotated Bibliographic Surveys
Springer International Series in Operations Research and Management Science
Volume 52 ISBN 1-4020-7128-0

The roots of Multiple Criteria Decision Making and Multiple Criteria Optimization were laid by Pareto at the end of the 19th century, and since then the discipline has prospered and grown, especially during the last three decades. Today, many decision support systems incorporate methods to deal with conflicting objectives. The foundation for such systems is a mathematical theory of optimization under multiple objectives. Since its beginnings, there have been a vast number of books, journal issues, papers and conferences that have brought the field to its present state. Despite this vast body of literature, there is no reliable guide to provide an access to this knowledge. Over the years, many literature surveys and bibliographies have been published. With the ever rapidly increasing rate of publications in the area and the development of subfields, these were mostly devoted to particular aspects of multicriteria optimization: Multiobjective Integer Programming, Multi-objective Combinatorial Optimization, Vector Optimization, Multiobjective Evolutionary Methods, Applications of MCDM, MCDM Software, Goal Programming; Hence the need for a comprehensive overview of the literature in multicriteria optimization that could serve as a state of the art survey and guide to the vast amount of publications. Multiple Criteria Optimization: State of the Art Annotated Bibliographic Surveys is precisely this book. Experts in various areas of multicriteria optimization have contributed to the volume. The chapters in this book roughly follow a thread from most general to more specific. Some of them are about particular types of problems (Theory of Vector Optimization, Nonlinear Multiobjective Programming, Fuzzy Multiobjective Programming, Multiobjective Combinatorial Optimization, Multicriteria Scheduling Problems), while the others are focused on multi-objective methodologies (Goal Programming, Interactive Methods, Evolutionary Algorithms, Data Envelopment Analysis). All contributing

authors invested great effort to produce comprehensive overviews and bibliographies and to have references that are as precise as possible.

Multicriteria Optimization / Multicriteria Decision Analysis State of the Art

J. Figueira, S. Greco and M. Ehrgott (editors)

Multiple Criteria Decision Analysis – State of the Art Annotated Surveys
Springer International Series in Operations Research and Management Science
Volume 76 ISBN 0-387-23067-X

This book is the most comprehensive work available to survey the state of the art in MCDA to date. Its 24 chapters are arranged in eight parts and are written by 49 internationally leading experts. Each of these parts covers one of the central streams of multiple criteria decision analysis literature. These literature streams are: MCDA today, Foundations of MCDA, Outranking Methods, Multiattribute Utility Theory, Non-Classical MCDA Approaches, Multiobjective Mathematical Programming, Applications, and MCDM Software. The handbook presents the most up-to-date discussions on well-established methodologies and theories in the field, while systematically surveying emerging fields in MCDA such as conjoint measurement, fuzzy preferences, fuzzy integrals, rough sets, etc. MULTIPLE CRITERIA DECISION ANALYSIS: State of the Art Surveys is a valuable reference volume (more than 2000 references) for the field of decision analysis. It provides graduate students, researchers, and practitioners with a sweeping survey of MCDA theory, methodologies, and applications. It is a handbook that is particularly suitable for use in seminars in Decision Analysis, Decision Support and Decision Theory.

“Let me congratulate you the fine result of your hard work as editors. Indeed, you attracted the most representative authors and contributions for contemporary MCDA. I have never seen such a complete and up to date book on MCDA. It will be a basic reference for the next decade.”

Roman Slowinski, Editor of EJOR

The authors of these volumes include 3 winners of the EURO Gold Medal, 9 presidents, vice-presidents, or honorary chairmen of national OR societies, 4 presidents and 1 secretary of EURO, 2 vice-presidents of IFORS, 3 presidents of the MCDM Society, 4 winners of the MCDM Society Gold Medal, 3 winners of

the MCDM Society Georg Cantor Award, 2 winners of the MCDM Society Edgeworth Pareto Award, 1 winner of the Wiley Prize for MCDA applications.

For more information, including free downloads and an html version of the references visit www.esc.auckland.ac.nz/ehrgott/AnnBibs.html

Job Opportunities

Lecturer/Senior Lecturer in Operations Management/Decision Sciences

Victoria Management School

The School is seeking to make a full time appointment at Lecturer or Senior Lecturer level in Operations Management/Decision Sciences. The successful appointee must be able to demonstrate a strong capacity to teach at undergraduate and postgraduate level as well as undertake such other duties as may be required by the Head of School. A capacity and commitment to initiate, conduct and publish research is essential. Preference will be given to candidates with a relevant Ph.D.

For print media

Applications close 14 January 2005. Please quote FCA 0419.

For further information please visit www.jobs.vuw.ac.nz or contact Kim Willcox, Human Resource Advisor tel: 04 463 5738 or email kim.willcox@vuw.ac.nz

For online media (Jobs at Victoria)

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Please ensure that you have read the role description and your skills and experience match the requirements of the role before applying.

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The Department of Internal Affairs, Te Tari Taiwhenua, traces its roots back to the period immediately following the signing of the Treaty of Waitangi. We helped shape our country and today we are looking forward to the future of New Zealand.

Our Local Government and Community Branch offers you a unique opportunity to join our new Strategic Analysis and Information unit. We are excited about having you use your superior policy and analytical skills and senior level experience to contribute to the establishment of the unit as the primary holder of knowledge on local government and community matters in New Zealand.

In this vital role we are offering you the opportunity to:

- undertake environmental scanning and trend analysis
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- highly developed qualitative and quantitative analytical skills
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Please forward your completed application, including a covering letter, CV and completed application form to Sarah-Margaret Hansen, Department of Internal Affairs, PO Box 805, Wellington, or via email to cdg-recruit@dia.govt.nz

Applications close at 5pm, Friday 10 December 2004.

The Department has a policy of Equal Employment Opportunity.

He kaupapa whakaorite whiwhinga mahi ta Te Tari Taiwhenua.

Meetings Calendar

New Zealand

**Mathematics for Industry Study Group
MISG2005, Massey University, Auckland, New Zealand**

January 24, 2005 – January 28, 2005
<http://misg2005.massey.ac.nz>

**ANZIAM 2005, Napier, New Zealand
January 30, 2005 – February 3, 2005**
<http://www.math.waikato.ac.nz/anziam05/>

**Workshop on Optimization of Transportation
Services, University of Auckland, New Zealand**
April 19 – April 22, 2005
<http://www.esc.auckland.ac.nz/Transportation>

International

The 6th International Conference on Optimization: Techniques and Applications (ICOTA 2004), Balart, Australia
December 9, 2004 – December 11, 2004
<http://www.ballarat.edu.au/ard/itms/CIAO/ORBNewletter/ICOTA/welcome.shtml>

International Conference on Computational Methods (ICCM 2004), Singapore
December 15, 2004 - December 17, 2004
<http://www.nus.edu.sg/ACES/ICCM2004.htm>

15th International Symposium on Algorithms and Computation (ISAAC 2004) Hong Kong
December 20, 2004 - December 22, 2004
<http://www.cs.ust.hk/~isaac04>

AIRO Winter 2005 - An International Conference in memory of Stefano Pallottino Dolomites, Italy
January 31, 2005 - February 5, 2005
<http://www.iasi.cnr.it/~felici/aw05/index.html>

Third International Conference on Evolutionary Multi-Criterion Optimization (EMO 2005), Guanajuato, Mexico
March 9, 2005 – March 11, 2005
<http://www.cimat.mx/emo2005/>

**International Network Optimization Conference
Lisbon, Portugal**
March 20, 2005 - March 23, 2005
<http://www.inoc2005.fc.ul.pt/>

The 8th International Workshop on Nature Inspired Distributed Computing (NIDISC'05) Denver, Colorado
April 4, 2005 - April 8, 2005
<http://www.lifl.fr/~talbi/nidisc>

**Operational Research Practice in Africa (ORPA)
Ouagadougou, Burkina Faso**
April 7, 2005 - April 8, 2005
<http://www.euro-online.org/africanOR/orpa2005>

Eighth SIAM Conference on Optimization Stockholm, Sweden
May 15, 2005 - May 18, 2005
<http://www.siam.org/meetings/op05/>

Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problem Prague, Czech Republic
May 30, 2005 - June 1, 2005
<http://cpaior05.mff.cuni.cz/index.html>

Eleventh Conference on Integer Programming and Combinatorial Optimization (IPCO XI) Berlin, Germany
June 8, 2005 - June 10, 2005
<http://www.math.tu-berlin.de/ipco05>

2005 INFORMS Conference on OR/MS Practice: Applying Science to the Art of Business, Palm Springs, California
April 17, 2005 - April 19, 2005
<http://www.informs.org/Conf/Practice05>

7th International Conference of the Canadian Operational Research Society, Halifax (Nova Scotia, Canada)
May 16, 2005 – May 18, 2005
<http://www.dal.ca/~jblake/cors2005/>

8th ISAHP, University of Hawaii, Honolulu, USA
July 8 – July 10, 2005
<http://www.isahp2005.net/>

17th Triennial Conference of the International Federation of Operational Research Societies 2005, Honolulu, Hawaii
July 11, 2005 - July 15, 2005
<http://www.informs.org/Conf/IFORS2005/>

The 6th Metaheuristics International Conference (MIC 2005), Vienna, Austria,
August 22, 2005 – August 26, 2005
www.mic.2005.org

Mathematical Models for Optimizing Transportation Services

University of Auckland
19 - 22 April, 2005

The Operations Research Group of the University of Auckland is pleased to announce a workshop to be held at the University of Auckland from April 19-22, 2005. The workshop is jointly funded by the New Zealand Institute of Mathematics and its Applications and the Operations Research Group in the University of Auckland, as part of a thematic programme in Optimization.

Conference Theme

The theme of the Workshop is optimization of transportation services. The transportation services industry has a long and successful history of applying mathematics in their planning processes. Optimization models are employed on a routine basis, e.g. in routing and crew planning. In recent years the ability to solve these models in industrial applications has motivated a trend to consider such problems in increasingly realistic settings. One enhancement is to consider the uncertainty that prevails in operation as compared to the deterministic scenario assumed for planning. Other extensions to the theory have looked at optimizing the design of transportation systems for use by many agents when they are all optimizing individually. A further focus of attention has been the development of pricing models that either maximize revenue for service providers or deliver economically efficient allocation of resources in transportation systems.

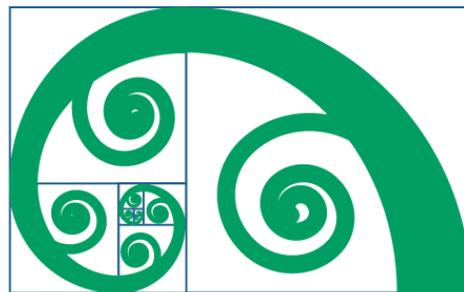
The workshop will focus on these three broad areas of major importance: transportation planning under uncertainty, optimizing the design of transportation systems, and pricing and revenue management. Exploring the interface between these areas will be of particular interest, and so the workshop will seek to bring together researchers who work in each of these fields to provide a cross-fertilization of ideas. A further goal is to emphasize the interface between mathematical optimization and its applications in practical situations. To enhance this we will be engaging the support and participation of industrial partners.

Invited Speakers

- Prof. Michael Florian (University of Montreal)
- Prof. Michel Gendreau (University of Montreal)
- Assoc. Prof. Huei Chuen Huang (National University of Singapore)
- Prof. Ellis Johnson (Georgia Institute of Technology)
- Assoc. Prof. Anton Kleywegt (Georgia Institute of Technology)
- Prof. Gilbert Laporte (HEC Montreal)
- Prof. Oli Madsen (Technical University of Denmark)
- Prof. Anna Nagurney (University of Massachusetts)
- Prof. Werner Romisch (Humboldt University of Berlin)
- Prof. Garret van Ryzin (Columbia University)
- Prof. Dr. Anita Schöbel (University of Göttingen)

We are soliciting contributed talks from interested researchers who work in these fields. Contributed talks must be relevant to the themes of the Workshop. If you are interested in submitting a contributed talk then please email a title and abstract to Andy Philpott at a.philpott@auckland.ac.nz or Matthias Ehrgott at m.ehrgott@auckland.ac.nz before February 15, 2005.

More information about the venue, registration fee, etc. is available on the website www.es.auckland.ac.nz/Transportation



**New Zealand Institute of
Mathematics & its Applications**

Conference in Budapest Summer School in Lugano

The 2005 Annual EurOMA conference is to be held in Budapest in Hungary from June 19-22, 2005. The conference is being organised jointly by EurOMA and HALPIM

The theme this year is: **Operations and Global Competitiveness**

<http://www.euroma2005.hu/>

CALL FOR PAPERS!!!!

Papers on all topics related to research, practice and teaching of Operations Management are invited. The following conference tracks are envisaged:

Global Operations and Supply Chains; International Operations Management; Operations Strategy; Operations and Supply Chain Performance Management; Service Operations Management; Production and Manufacturing Management; Cultural and Human Issues in Supply Chain Management; Co-design and New Product Development; Operations Planning and Control; Purchasing and Supply Management; Inventory Management; Logistics and Physical Distribution; Environmental and Technology Management; Teaching issues in Operations Management

Contributors are invited to submit an extended abstract (500-800 words) for consideration for inclusion in the program by January 10th, 2005. Abstracts can be submitted by the corresponding author, after on-line pre-registration in the conference secured database via the website.

Decisions regarding acceptance will be made by February 20th, 2005. Authors of accepted papers (at least one person) must register, attend the conference and present the paper. Complete papers must be received in full by April 10th, 2005. Accepted papers will be published in the Conference Proceedings. A bound copy of Conference Proceedings as well as a CD will be provided to each participant. A selection of the papers presented at the conference will be published in special journal issues.

For more detailed information please consult the conference website.

We look forward to receiving your registration and seeing you in Budapest.

HALPIM Secretariat

Lugano Summer School 2005

A Doctoral Summer School on Soft and Critical Systems Thinking

As in previous years, I am organizing a Summer School on contemporary systems thinking approaches at the *University of Italian Switzerland in Lugano*.

However, the format and the target group of LSS 2005 will be different. I would like to update you on my plans.

Target audience: LSS 2005 will -- for the first time -- take place as a *Doctoral Summer School*. It will be reserved to a small group of 15-20 mature students (research students, doctoral students) or research staff.

Topics and learning goal: The aim of LSS 2005 will be to explore possibilities for an *integration of "soft" and "critical" systems thinking* approaches, as represented by Soft Systems Methodology (SSM) and Critical Systems Heuristics (CSH). The learning goal will be not only to understand the basic assumptions and the application of the two approaches, so as to be able to practice them, but also to overcome any false opposition of soft and critical systems thinking in favor of reflective professional practice.

Faculty: Professors *Peter B. Checkland*, Lancaster, United Kingdom, and *Werner Ulrich*, Fribourg, Switzerland.

Format: The new format will be shorter than in previous years and will be more *workshop-like*. Rather than requiring four or five weeks of class work as in the past, the Doctoral Summer School will last two weeks (ten week days and a free weekend in the middle). The didactic format will be a combination of taught classes (two introductory courses) and workshop sessions in which the participants, together with the two professors, will explore similarities and differences of the two approaches and, on this basis, will each develop their personal framework for integrating SSM and CSH into their future research and professional practice.

Dates: *30 May-10 June 2005*.

For more information, I attach a *Summer School Flyer* for easy print-out, forwarding, or posting on message boards.

Werner Ulrich, Prof. Dr.rer.pol.

School website: <http://www.lss.lu.unisi.ch/>

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STATISTICA



Data Miner

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STATISTICA Data Miner uses simple mouse-driven techniques that adhere to the general standards for a Windows user interface.

It's fast...

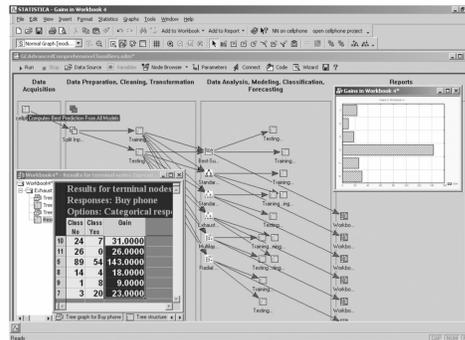
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You can see an animated slide show that covers the main points, at www.hrs.co.nz/slideshows.aspx.

More information...

For more information, contact Darrel Amarasekera on 0800 477 776, email darrel@hrs.co.nz or visit our website www.hrs.co.nz/statistica_dataminer.

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