

# NEWSLETTER

April 2010

Operational Research Society of New Zealand, Inc.  
PO Box 6544, Wellesley St. Auckland, New Zealand, [www.orsnz.org.nz](http://www.orsnz.org.nz)

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The newsletter is published three to four times per year, regular dates are March, June, September, and December. Submissions deadline is the 15th of the month for the following month's issue. Send contributions by email to the Newsletter editor, Kenneth Kuhn, at [newsletter@orsnz.org.nz](mailto:newsletter@orsnz.org.nz).

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## President's Report

Welcome to the first newsletter of 2010. I hope you have all enjoyed a relaxing break during one of the best summers I can remember for a while.



This newsletter is the first to be delivered by our new newsletter editor, Kenneth Kuhn. Kenneth is being shown the ropes by Fritz Raffensperger, who has years of experience to draw on. We welcome Ken to the ORSNZ, and to the editor's position. You can send your contributions to Ken at [newsletter@orsnz.org.nz](mailto:newsletter@orsnz.org.nz).

The 2009 annual general meeting saw several other changes to the ORSNZ Council. John Paynter stepped down from the Treasurer's position, a role he assumed in December 2003. John's 7 years in this position mark him as one of the longest serving treasurers in recent times.

The society has benefited immensely from John's contributions, including numerous improvements to the membership and financial database that is so pivotal to our operation. We also have John's professional stewardship to thank for the healthy state of the society's bank balances. John is succeeded by Andrea Raith, who has rapidly come up to speed with all the tasks that her new role involves. We look forward to John's 7-year record being broken by Andrea's upcoming contribution of 8 years, or 9, or 10...

Matthias Ehrgott stepped down from the Newsletter editor position, a position he has held since July 2004. During this time, he has succeeded in cajoling, wheedling and coaxing enough material from busy members to fill 16 high quality newsletters. Matthias's valuable contributions continue through his involvement as Vice President.

## Christchurch Conference

I'm sure all the attendees at the 44<sup>th</sup> Annual ORSNZ Conference will join me in thanking the Christchurch ORSNZ team for organising such an enjoyable conference. Shane Dye and his colleagues John George, John Giffin, Terri Green, Ross James, Don McNickle, Nicola Petty, E. Grant Read, John Raffensperger, and Pulakanam Venkateswarlu did a great job in putting together an interesting program and ensuring a smooth running professional event.

One of the highlights of the conference was the plenary presentation by Andy Philpott and Graeme Everett who gave us a fascinating insight into their work with Norske Skog and the practical challenges that arise when using OR techniques to downsize a major pulp and paper company. It is easy to see why their project was included amongst the Edelman finalists earlier in the year. Dorit Hochbaum (USA) also delivered an excellent plenary address covering a new graph-based approach to the problem of generating rankings such as occurs when fund-

ing applications are appraised by committees. Denis Borenstein (Brazil) and Michael Pidd (UK) rounded out the star appearances with two interesting semi-plenary addresses. Thanks to flight problems, Denis's arrival illustrated a highly optimised just-in-time strategy that I'm sure caused the conference organisers much anguish!

An innovative new development at the conference was a prize for best talk decided by votes cast by attendees. I'd like to thank Fritz Raf-fensperger for organising this, and am pleased to announce that Oliver Weide won this inaugural 2009 Best Presentation Award for his talk on resource scheduling for hospitals, work he is doing with The Optima Corporation. Well done, Oliver.

John George and his fellow judges had the difficult task of determining the winners of the Young Practitioners Prize (YPP). Once again I was very impressed by the high standard of presentations. The 2009 winners are listed below. I was particularly pleased to have both old and new graduates amongst our winner. Undergraduate winners Qi-Shan Lim and Antony Phillips are final year Engineering students, while Faram Engineer, who won the postgraduate prize, studied at Auckland before undertaking a PhD at Georgia Tech. It was during his time at Georgia Tech that he completed the work on vaccination scheduling that won him the YPP prize.

The quality of the YPP winners is illustrated best by the judges' comments:

*[Faramroze Engineer's work] in developing a very fast algorithm for child catch-up vaccination scheduling is a splendid example of OR in practice. It tackles the problem of being both rigorous and practical as well as making it accessible. To the user the complexity of the solution algorithm is hidden and they would be forgiven for believing it is easy. The expert*

*OR practitioner knows otherwise and that is its beauty. [A Phillips work on] container positioning captured our attention for it's up-staging of a PhD student's research using interesting ideas that resulted in a major advance in the field. We noted both the ingenuity of [Lim's solution of the Trim Loss Problem] and the immediate applicability of the results and its benchmarking with reality.*

I would like to acknowledge the contributions of the conference sponsors IBM ILOG, University of Canterbury, Paragon Decision Technology and Hoare Research Software. Their support helped ensure the success of this conference. For those unable to attend, the full conference proceedings can be accessed via the ORSNZ web site, <http://www.orsnz.org.nz>.

On a personal note, my family and I headed out to Bank's Peninsula after the conference to enjoy a few days exploring the landscape and environs. I am most envious of Cantabrians for having such an amazingly beautiful playground so close to their city.

The next ORSNZ conference will be held in Auckland in late November/early December. We look forward to seeing many of you at this conference. Please note that there will be no NZ conference in 2011, but instead the ORSNZ conference will form part of the 2011 IFORS conference in Melbourne on 10-15 July 2011.

### GST Changes

At the Annual General Meeting, it was agreed that the Society would de-register for GST in the near future. This change will help make the already onerous treasurer's position a little lighter. We clearly show our GST status on our subscription requests, so please check this carefully when making your next subscriptions payment.

*Andrew Mason*  
President, 22 March 2010

1st Postgraduate	Faram Engineer	Auckland, BE ME (EngSci) PhD (Georgia Tech)	Catch-up Scheduling for Childhood Vaccination
1st Undergraduate	Qi-Shan Lim	Auckland, BE (EngSci)	Trim Loss and Inventory Optimisation in Paper Mills
2nd Undergraduate	Antony Phillips	Auckland, BE (EngSci)	Optimisation Models and Methods for the Container Positioning Problem in Port Terminals

2009 ORSNZ Young Practitioner Prize winners

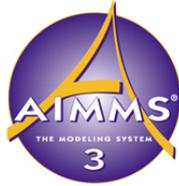




ILOG, an IBM Company



University of Canterbury



Paragon Decision Technology



Hoare Research Software

## ORSNZ09

### 44<sup>th</sup> Annual Conference of ORSNZ

The 44<sup>th</sup> Annual ORSNZ Conference was successfully held at the University of Canterbury. It was nice to welcome such a friendly group to Canterbury, though the weather and lack of heating provided a less welcoming temperature than we would have wished for. The nearly 60 participants attended some 40 interesting talks on a wide range of OR related topics, ranging from applying the Theory of Constraints to assurance of learning in universities to customised column generation at compile-time for staff rostering, and applications ranging from New Zealand military workforce analysis to the environmental modelling of Lake Ellesmere. It is great to see OR doing good in the world. The water market session provided an interesting contrast between hard and soft approaches to a very important problem.



Graeme Everett and Andy Philpott  
Thursday's keynote address

This is thanks, in part, to the kind sponsorship from IBM, the University of Canterbury, Paragon Decision Technology and Hoare Research Software; and to the efforts of Conference Organisation Committee, who made the Committee's Chair look efficient and well organised — no mean feat.

The conference had two keynote addresses. The Thursday keynote was an interesting and entertaining presentation by Graeme Everett (Norske Skog) and Andy Philpott (Department of Engineering Science, University of Auckland), which showcased their finalist entry in the INFORMS Franz Endleman award. Their presentation outlined how global papermaker Norske Skog used an OR tool developed by Graeme and Andy in New Zealand to save the company millions of dollars annually, in the face of declining international demand for paper.

The Friday keynote was a fascinating seminar by Professor Dorit Hochbaum from Haas School of Business and Department of IE&OR, University of California, Berkeley. Dorit gave an overview of some new models and methodologies for group decision-making and rank aggregation. The applications particularly focussed on situations with missing observations, where not all judges or decision-makers reviewed all entries or projects, and where inconsistencies between judges might adversely affect the final outcome. Dorit's own experiences in group decision-making motivated and illustrated the theory.



Professor Dorit Hochbaum  
Friday's keynote address

The conference also hosted two semi-plenary talks. Professor Denis Borenstein from the Management School of the Federal University of Rio Grande do Sul presented on integrated distribution of empty and full containers using agent-based simulation. Professor Mike Pidd gave a thought provoking presentation on model use in OR/MS.



Professor Mike Pidd  
Semi-plenary

This year 10 projects were showcased to the ORSNZ during the Young Practitioner's Prize sessions. The standard of presentations was very high. The range of projects was also diverse, covering simulation of a student health centre, optimising resin mould filling, and ambulance staff rostering to name a few. The judges had an extremely difficult job in evaluating the various projects.

Faram Engineer was awarded first prize among the postgraduate projects. This year's judging panel was lead by John George, he had the following to say about Faram's presentation "his work in developing a very fast algorithm for child catch-up vaccination scheduling is a splendid example of OR in practice. It tackles

the problem of being both rigorous and practical as well as making it accessible. To the user the complexity of the solution algorithm is hidden and they would be forgiven for believing it is easy. The expert OR practitioner knows otherwise and that is its beauty."



Faram Engineer, YPP 1<sup>st</sup> Prize – Postgraduate

Qi-Shan Lim was awarded first prize. The judge's stated "We noted both the ingenuity of the approach and the immediate applicability of the results and its benchmarking with reality." Antony Phillips was awarded second prize among the undergraduate projects. The judges noted "This captured our attention for it's up-staging of a PhD student's research using interesting ideas that resulted in a major advance in the field."



Qi-Shan Lim, YPP 1<sup>st</sup> Prize – Undergraduate



Antony Phillips, YPP 2<sup>nd</sup> Prize – Undergraduate

Congratulations Faram, Qi-Shan and Antony, and well done to all of the entrants. Special thanks to this year's judges: John George, Alastair Duffy and Fritz Raffensperger (who bravely stepped in at the last minute to replace Terri Green).

The remainder of Conference program was also interesting and diverse, showing that operations research is indeed alive and well within New Zealand, that New Zealand operations research is predominately of a very applied nature and tackles interesting and important problems. Participants were also treated to some interesting international talks.

This year the conference committee ran a Best Paper award. The winning paper was selected by popular vote and we are pleased to announce that the award went to Oliver Weide for his excellent presentation on operating theatre optimisation. Oliver described an optimisation model which allowed hospitals to allocate surgeons and surgeries to operating theatres.

The banquet (at Annies Wine Bar in the Christchurch Arts Centre) and other social functions were also enjoyed by all, even the few harried organisers. Thanks to Nicola, Terri and Don for organising this; your efforts did not go unnoticed.

The conference also marked two major role changes for the ORSNZ council. John Paynter relinquished the role of Treasurer to Andrea Raith and Matthias Ehrgott handed over the role of editor of the newsletter to Ken Kuhn. John and Matthias were thanked on behalf of the Society at the conference banquet.



John Paynter



Matthias Ehrgott

This year, the conference packs contained test booklets for Rogo, the newest puzzle craze from New Zealand. This has now progressed to a website providing a new puzzle each day, and booklets are being developed for sale at the Arts Centre in Christchurch and on-line. You can see all about it by searching on Rogo in Google, or going direct to [www.rogopuzzle.co.nz](http://www.rogopuzzle.co.nz). There are links from the website to OR-related sites, and to rogaining - the ultimate sport for a fit OR person.

As an aside to this, earlier in 2009 Shane, Nicola and John ran a rogain for their stage 2 class, which was very successful at motivating and engaging the students in an exercise in dynamic heuristic problem solving. Consequently they have been asked to run a similar event for High School students in March. We will let you know how it goes!

Finally, thanks again to the conference organising committee, without whom the conference would not have been so great. Thanks John George, John Giffin, Terri Green, Ross James, Don McNickle, Nicola Petty, E. Grant Read, John (Fritz) Raffensperger, and Pulakanam (Venkat) Venkateswarlu.

Shane Dye  
Chair, 2009 ORSNZ Conference Organising Committee

## Chapter News

### Auckland News

Greetings from Auckland. The start of semester has seen quite a lot of OR related activities. We have 15 part IV OR projects this year on varied topics ranging from “comparing the efficiency of stores at NZ Post” to “design of road networks using equilibrium programming”; both projects are offered by Dr. Andrea Raith incidentally who has joined the department as a lecturer since January. Andrea completed her PhD in 2009 under the supervision of Matthias Ehrgott. Her dissertation is titled “multiobjective routing and transportation problems”. You can read a bit more on Andrea's thesis and her PhD defense on Anna Nagurney's blog RENEW!

This year has also seen the birth of Grace O'Sullivan, daughter to Mike (Jr) and Lauren, and we are expecting one more OR baby later on in the year from Andrew Mason and wife Catherine. Congratulations to you all, well done!

We have started our seminar series with a boost. Professor Kaj Madsen (DTU), long time friend of David Ryan, visited New Zealand for the first time this February. He gave an Engineering Science seminar titled “Space Mapping for Engineering Optimization”. Later this month we expect a visit from Dr. Gavin Bell, a former PhD student of Grant Read, who will speak to us about “living in a carbon-based world: CO2 and its impact on the EU power sector”. Professor Chanaka Edirisinghe will visit us in April, en route to Canterbury, and talk about “arbitrage-free pricing of contingent claims in incomplete markets via moment problems”; as I write these words, I wonder if his talk will be applicable to electricity markets. I look forward to these and many more this year. If you plan to travel to Auckland and would like to present a research seminar, I am the department seminar organizer, so don't hesitate to contact me.

*Golbon Zakeri*

### Canterbury News

Our big news, since last newsletter was the annual conference, as reported elsewhere. But we also had time for a brief visit from Associate Professor Denis Borenstein. Universidade Federal do Rio Grande do Sul, Escola de

Administração, Departamento de Ciências Administrativas, Brasil.

Denis is a graduate in Naval Engineering from the Federal University do Rio de Janeiro and completed a PhD in Operational research at the University of Strathclyde, Scotland. He works in administration, computer science and production engineering with an emphasis on operational research. In particular, he is involved in areas such as modelling and simulation of container and transport logistics in real time, multi-agent systems, business intelligence, and heuristic production systems.



Those who were at the ORSNZ conference will recall Prof Borenstein's presentation on “Supply Chain Based Agent Simulation: Towards a Normative Approach”. But Professor Borenstein also presented to the Department of Management, and ORSNZ Canterbury branch, at the University of Canterbury. Among other things, he filled us in on developments with the Brazilian OR Society. But his informative presentation focused on container logistics in Brazilian ports, and particularly on management of container availability and waiting times to benefit international trade, within the constraints of international shipping requirements.

*Antonio Pinto, Grant Read*

### Wellington News

Another trimester is about to kick off at Victoria University. We have had two summer research scholarship students working on multiple-objective optimisation and genetic programming over the summer. Prof Mike Wright (from Lancaster University) is visiting until the end of April; his research interests are in sports scheduling and metaheuristics. We have a few branch talks lined up in the near future, including talks on energy modelling, sports scheduling, and the theory of constraints. Finally, readers may be interested in the brilliant publicity material (including a DVD) available through the UK OR Society, and the "Learn about OR" website (<http://www.learnaboutor.co.uk/>).

*Mark Johnston*

## OR Theses from NZ



**Andrea Raith, PhD in Engineering Science, The University of Auckland**

*Multiobjective Routing and Transportation Problems*

Andrea Raith graduated with a Bachelor of Science in Mathematics and Computer Science from the Technische Universität Darmstadt, Germany in 2002. In 2005 she completed the degree of Diplom Mathematikerin. During this time she spent two semesters at the University of Saskatchewan, Canada. After working as a researcher for the Department of Electrical Engineering and Information Technology at Technische Universität Darmstadt, Andrea came to New Zealand to enrol in the PhD programme in December 2005. Her research was supervised by Associate Professor Matthias Ehrgott, Dr Judith Wang and Dr Stuart Mitchell, and was supported by a scholarship from the New Zealand Institute of Mathematics & its Applications. Andrea investigated solution algorithms for various optimisation problems in transportation and traffic modelling.

Real-life decisions in transportation are often made according to multiple conflicting criteria. For instance, route choice decisions are seldom based on a single criterion, such as the shortest distance. Other important factors are safety, convenience and even scenery. Therefore transportation-related optimisation problems are intrinsically multiobjective. Andrea investigated the shortest path, the integer minimum cost flow and the traffic assignment problems. She conducted an extensive comparison of existing and novel solution strategies for the bi-objective shortest path problem which will enable researchers to choose appropriate methods for their particular needs in solving these problems. Andrea also suggested modelling the route choice of cyclists as a bi-objective problem, as cyclists aim at reaching their destination quickly but also along a safe route. Andrea introduced the first correct solution algorithm for the bi-objective integer minimum cost flow problem. This enables researchers and practitioners to fully consider the bi-objective nature of flow problems. Finally, traffic assignment is the process of modelling route choice of travellers

in a road network while taking congestion effects into account. Andrea proposed novel methods for modelling road user behaviour, and thus route choice, more accurately. The proposed methods may prove valuable in transportation planning, especially in modelling travel behaviour in the presence of road tolls.

During her doctoral studies, Andrea developed an interest in different areas of optimisation in transportation and she was also involved in teaching at her department. She is currently employed as a lecturer at the Department of Engineering Science, where next to teaching; she continues her research in transportation and traffic modelling.

**Pang Fei Cheung, Master of Engineering, The University of Auckland**



*A Fast Optimization Method for Referee Assignment Problems in Sports Leagues*

In recent years, Operations Research techniques have been successfully applied to a number of problems in sports management. In his thesis, Pang Fei considers one such problem, the assignment of referees to soccer games that are already scheduled. Soccer games have different referee level requirements depending on the importance of the game. Each game requires one main and two side judges. Each referee has a skill level and can only referee those games that are equal or below his/her skill level. There are also other constraints that need to be satisfied such as the unavailable times of the referees during the day. These constraints can make the problem extremely complex. A problem instance from amateur soccer leagues could involve hundreds of referees and hundreds of games.

The problem is formulated as a generalised set partitioning problem, which has the same characteristics as the airline crew rostering model. The objective function can be set to (i) minimise the sum over all referees of the slack between their target and actual numbers of scheduled games, (ii) minimise the sum of deviations of skill levels between the referees and the games, (iii) minimise the total number of assigned referees, and (iv) minimise the total idle time of all referees. The goal of solving these problems is

to optimize the satisfactions of the referees and solve the problem in a reasonably quick time. Pang Fei develops an algorithm that decomposes the entire problem into problems at each facility, and solves the referee assignment problem by a three-stage solution approach. Each of the optimisation problems is solved using column generation and branch-and-bound with constraint branching. Numerical results are presented and discussed to highlight the advantages and the limitations of this approach.



## ORSNZ Honorary Visiting Lecturers: Call for Nominations

From: <http://www.orsnz.org.nz/Prizes/>

### Profile: the Water Markets Research Group

The Water Markets Research Group (Wai Makete Rangahau Ropu) investigates the use of smart markets to allocate complex hydrological resources. Market mechanisms have been considered for ground water, surface water, the combination of the two, nitrates, sediment runoff, and impervious cover. Challenges to be overcome include status quo rights, stochasticity in system dynamics, and different time scales of analysis.

The Water Markets Research Group has considered case studies in Marlborough and Selwyn in New Zealand, as well as in Tianqiao in China. The group has developed partnerships with the Chinese University of Geosciences in Wuhan, the Johns Hopkins University, the Wetland Initiative (with the U.S. EPA), and Market Reform. The group is comprised of a diverse set of researchers at the University of Canterbury including: John F. Raffensperger, Mark W. Milke, E. Grant Read, Thomas Cochrane, Shane Dye, John George, Rebecca Teasley, Ranga Prabodanie, Antonio Pinto, and Stephen Starkey.

The ORSNZ invites nominations for ORSNZ honorary visiting lecturers to visit New Zealand between September and June each year. Each visiting lecturer is invited to give a talk on some topic likely to be of general interest to ORSNZ members at three or more of Auckland, Hamilton, Wellington, and Christchurch. Each visiting lecturer will be invited to write a guest editorial for the society newsletter. The ORSNZ contributes to the costs up to a maximum of \$1000 plus GST (if any) per visitor. 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 three or more of the above named centres. Enquiries concerning, or nominations for, lectureships should be sent to [president@orsnz.org.nz](mailto:president@orsnz.org.nz). The closing date for nominations is the end of April.

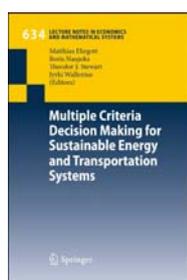
Once nominations have been received, the President will consult Council before forming a subcommittee to review the nominations. The subcommittee is to determine the options that are to be presented to Council. Multiple visiting lecturers in any one year are permissible if the circumstances permit.



Water Markets Research Group members (in order from text, from top left).



## Books



M. Ehrgott, The University of Auckland, New Zealand; B. Naujoks, Login GmbH, Schwelm, Germany; T.J. Stewart, University of Cape Town, South Africa; J. Wallenius, Helsinki School of Economics, Finland (Eds.)

### **Multiple Criteria Decision Making for Sustainable Energy and Transportation Systems**

**Proceedings of the 19th International Conference on Multiple Criteria Decision Making, Auckland, New Zealand, 7th - 12th January 2008**

In the twenty-first century the sustainability of energy and transportation systems is on the top of the political agenda in many countries around the world. Environmental impacts of human economic activity necessitate the consideration of conflicting goals in decision making processes to develop sustainable systems. Any sustainable development has to reconcile conflicting economic and environmental objectives and criteria.

The science of multiple criteria decision making has a lot to offer in addressing this need. Decision making with multiple (conflicting) criteria is the topic of research that is at the heart of the International Society of Multiple Criteria Decision Making. This book is based on selected papers presented at the societies 19th International Conference, held at The University of Auckland, New Zealand, from 7th to 12th January 2008 under the theme "MCDM for Sustainable Energy and Transportation Systems"

2010, XVIII, 389 p., Softcover

ISBN: 978-3-642-04044-3

<http://springer.com/978-3-642-04044-3>

## Minutes of the Forty-fourth Annual General Meeting of the Operational Research Society of New Zealand

**Date:** December 3 2009

**Time:** 17:00

**Place:** Central Lecture Block Room C2 University of Canterbury Christchurch

**Attending:** Don McNickle, Alastair Duffy, Eduard Bulog, Karl Ho, Antony Phillips, Qi-Shan Lim, James Kirch, Kane Harton, Adrian Van Nierop, Simon Bull, Wing Ki Kam, Alastair McNaughton, Anthony Downward, Grant Read, Oddo Zhang, Andrea Raith, Kenneth Kuhn, Vicky Mabin, Nicola Petty, Ross James, Matthias Ehrgott, Andy Philpott, John Paynter, John F Raffensperger, Shane Dye, Andrew Mason, Fernando Beltran.

**Apologies:** Mark Johnston, Golbon Zakeri, David Ryan

**Proxies received:** None

**Minuted by:** Fernando Beltran

### **A. Minutes of 2008 AGM and matters arising from it**

Andrew Mason informed the audience that the subject of de-registering the society for GST purposes had been discussed by the Council as requested at the last AGM. Council had resolved to de-register for GST.

He also pointed out that the Council had not yet addressed the issue of timing of the Annual Conference which was referred to Council at the last AGM. In response to this, the meeting also discussed the 2011 conference which, as agreed at the 2010 AGM, will take place as part of the 2011 IFORS conference in Melbourne. There was some discussion about funding the 2010 YPP prize winners to attend the 2011 conference. Andy Philpott said it is not necessarily a good idea to send the students as a large time will have elapsed between their work being completed and the IFORS conference, and many will be in the workforce at this time making attendance more difficult.

The President proposed that:

1. The timing of the Annual Conference not be changed for the 2010 ORSNZ conference in Auckland.
2. There be no 2011 annual conference in NZ, but that the ORSNZ conference and the ORSNZ AGM will take place during the 2011 IFORS Conference in Melbourne, 10–15 July 2011.

3. The funding of travel for one or more 2010 YPP winners to attend the IFORS conference in Australia in 2011 will be considered at the 2010 ORSNZ AGM.

Andrew Mason moved that the minutes of the previous AGM be accepted as true and correct. John Paynter seconded. Carried unanimously.

## **B. President's Report**

The President presented his annual report. He stressed the issues of GST de-registration, the society operating under its new constitution, and the latest membership figures. The President mentioned that the on-line registration system has been upgraded and improved.

The President announced that John Paynter will be stepping down as Treasurer this year and asked the AGM to thank him for his 6 years as Treasurer. John Paynter was thanked by the AGM with acclamation.

The President also

- noted that two ORSNZ visiting fellows will be visiting in 2009 (and speaking at the conference) announced that the newsletter editor, Matthias Ehtagott, is stepping aside. Matthias was thanked by the AGM with acclamation,
- reported that no "physical" Council meetings were held during the year, but that a number of decisions were reached over email,
- thanked Council members for various contributions,
- asked the AGM to congratulate Edelman finalists and society members, Andy Philpot and Graeme Everett,
- thanked the last conference organizers.

Andrew Mason moved that the President's report be accepted. Carried unanimously.

## **C. Treasurer's Report**

The Treasurer, John Paynter, spoke to the Treasurer's report.

John Paynter offered an overview of what had happened to the society's accounts since he took over in 2003. By going over his 2009 Treasurer's report, he presented the accounts to the AGM, and commented on the difficulties of billing that happen every year at the end of the year.

The President pointed out the important numbers from the accounts: opening balance and closing balance.

Fritz Raffensperger asked about the \$35 a month cost for credit card transactions. The cost of this service is now about 400 dollars a year. The President compared the old paper system with the new online system, noting the advantages of the new system. He clarified that the \$35 charge is not "all new" cost. This cost may change in the future because of recent Commerce Commission rulings regarding credit card fees.

Grant Read commented on the amount of money saved by the Society and questioned what this money is being saved for.

John Paynter commented on the difficulties the treasurer faces when having to chase members who owe their membership fees to the society.

Vicky Mabin wondered what members get from the society in return for paying their fees. In explaining the nature of Society's expenses, the Treasurer listed the following expenses: banking services, cost of newsletter, postal services, IFORS and the Royal Society, and P.O. Box rental. In addition, sending out proceedings to libraries and members not attending the conference is also a cost born by the Society.

The President recalled that when he took over in 2008 he proposed to the AGM to move the society to a lower cost operation. That also included a drop in membership fees to zero in the future.

## **D. Annual Report**

The President acknowledged the Wellington and Christchurch reports. The Christchurch branch chair reported that a few meetings were held during the year.

Speaking to the Newsletter Editor's report, Matthias Ehtagott called the AGM's attention to the difficulties in running the newsletter, which include asking people to contribute written material. The editor asked for a volunteer to take over.

The issue of moving to an online non-printed newsletter was raised and several problems were mentioned. The President suggested the issue be considered by Council.

Andrew Mason moved that the Annual Report be accepted. Vicky Mabin seconded. Carried unanimously.

## E. Election of Officers for 2009/10

The President chaired the election of Society officers.

John Paynter stepped down as Treasurer. Matthias Ehr Gott stepped down as Newsletter editor.

The President proposed that John Paynter continue as a Council member, in which role he would assist with a smooth handover to the new treasurer.

The President asked for a volunteer to take over as Editor of the newsletter. Fritz Raffensperger nominated Ken Kuhn to be editor. Ken accepted the nomination. The President asked for people to second the Newsletter Editor nomination. Nomination was carried unanimously.

The President nominated Andrea Raith to be Treasurer. Andrea Raith accepted the nomination. The President asked for people to second the Treasurer nomination. The nomination was carried unanimously.

The Council members proposed were as follows:

### Council members Nominees

President Andrew Mason  
Vice President Matthias Ehr Gott  
Newsletter Editor Ken Kuhn  
Treasurer Andrea Raith  
Secretary Fernando Beltran  
APORS IFORS Rep David Ryan  
Liaison Officer David Ryan  
Industry Representative Geoff Leyland  
John Paynter  
Stefanka Chukova  
Ross James  
Alastair McNaughton  
Andy Philpott  
Auckland Branch Chair Golbon Zakeri  
Wellington Branch Chair Mark Johnston  
Christchurch Branch Chair Grant Read  
Paul Rouse will be the Honorary Auditor.

Andrew Mason moved that all nominees be elected to these positions. Carried unanimously and with acclamation.

## F. Membership Fees

The President reminded the AGM of his vision to move fees to zero in the long term. He moved that the current membership fees be maintained.

Alastair McNaughton asked students attending the AGM how they feel about membership fees. Fritz Raffensperger asked to reduce any student's membership fees to zero.

Several AGM attendants discussed various ideas for lowering or removing student membership fees. Andy Philpott commented that all students coming to the University of Auckland Engineering Science programme may wish to be members, if fees are zero. The President reminded the AGM that students still receive items posted in the mail for those fees.

Shane Dye reminded the AGM that once students stop being students they do not keep their membership, and commented that zero fees would devalue membership.

Grant Read suggested that the Society offers free electronic membership to students and monitors how it works. If students want to get paper copies of proceedings, then they can join as a regular student member to gain such access.

The President proposed a new membership category for students only with electronic subscription and zero fees, and that Council should be left to decide the details of this. Fritz Raffensperger seconded the motion. Carried unanimously.

Fritz Raffensperger requested that Council report specifically on the implementation and consequences of the new member category.

The President requested that the newsletter-only fee (for libraries) be reduced to zero and that the Society covers the costs. He noted that this should also include libraries receiving copies of the proceedings. Shane Dye seconded the motion. Carried unanimously.

**At 17:56, the 2009 AGM meeting was closed.**

# Puzzle Corner

Rogo is a version the subset-selection, prize collecting travelling salesperson problem. Total tour length is restricted to a given number of steps (squares) taken vertically or horizontally (not diagonally). The tour must be a loop (returning to the starting square) which does not visit a square more than once and which avoids the black (forbidden) squares. Loops can start anywhere. The objective is to maximise the total score collected from those squares visited.

For Rogo 1 and Rogo 2 the maximum (best) score is given. The good scores indicate the quality of any sub-optimal tours you might generate on the way to finding the best solution. Note that for Rogo 1 loops are restricted to 12 steps, for Rogo 2 they are restricted to 16 steps and for Rogo 3 they are restricted to 20 steps.

Rogo 1  $\frac{12 \text{ Steps}}{\text{Good} \quad \text{Best}}$   
14    16

	5			3		3			4
4		■	3			■			2
					4		2		■
■		3		2					
4			■			2	■		5
3			3		4			4	

Rogo 2  $\frac{16 \text{ Steps}}{\text{Good} \quad \text{Best}}$   
31    35

	6		3		3	
6	■		4		■	6
3		4		4		4
■			4			■
5		3		6		3
5	■		4		■	3
	4		4		6	

For Rogo 3 we have not provided a best score. Your challenge is to find it. This one is a definite challenge. When you think you have found the best possible score email [shane.dye@canterbury.ac.nz](mailto:shane.dye@canterbury.ac.nz). The first correct entry received gets a Rogo booklet (worth \$5). Rogos are created by Nicola Petty and Shane Dye on behalf of Creative Heuristics. See [www.rogopuzzle.co.nz](http://www.rogopuzzle.co.nz) for more.

Rogo 3 20 Steps

6			3	■		7			9			6		■	3			9
	9							■										6
		6	■			■	4			6	■			■	7			
7		■	6												4	■		2
■					9				6			2						■
				2	1	2		■		■		3	9	1				
6		■			3							4			■			4
		4							4							3		
					■			5	■	3				■				
7	■	■		8			2	■	■	■	2			7		■	■	8
					■			4	■	5				■				
		9							7							7		
5		■			2							4			■			9
				1	3	3		■		■		4	1	3				
■					4				8				2					■
8		■	2												7	■		8
		6	■			■	8		■		5	■			■	8		
	4								■									4
9			9	■		3			6			7		■	5			6



# 19th Triennial Conference of the International Federation of Operational Research Societies (IFORS 2011)

10th - 15th July, 2011  
Melbourne, Australia  
[www.ifors2011.org](http://www.ifors2011.org)

## ORSNZ Annual Meeting and Call for Sessions

The 2011 ORSNZ Annual Meeting will be held within IFORS 2011. ORSNZ members are encouraged to attend the conference. Researchers interested in organizing a session for IFORS 2011 are encouraged to contact Andrew Mason ([a.mason@auckland.ac.nz](mailto:a.mason@auckland.ac.nz)) or Patrick Tobin ([Patrick.Tobin@acu.edu.au](mailto:Patrick.Tobin@acu.edu.au))

## Conference Theme: World OR - Global Economy and Sustainable Environment

Recent natural catastrophes and man-made crises have underscored the inter-connectedness of our world. Any upheaval leads to momentous reverberations across the globe with impacts well into the future. Now more than ever, Operational Research is of strategic importance to address problems critical to the economy and the environment.

Academics and practitioners are invited to share their knowledge, experience and insights on theory, methodology and application of operational research to issues of vital concern to the global community.

Papers on all aspects of Operational Research are invited. Authors wishing to present are requested to submit an abstract of not more than 100 words by 15 December, 2010.

Information on the Programme Committee and invited streams are on the conference webpage:  
<http://www.ifors2011.org>.

Instructions for abstract submission will be posted soon.

For enquiries, please contact the Programme Committee Chair:  
Prof. Janny M.Y. Leung  
Department of Systems Engineering and Engineering Management  
The Chinese University of Hong Kong Shatin,  
New Territories, Hong Kong  
Phone: +(852) 2609-8238  
E-mail: [jleung@se.cuhk.edu.hk](mailto:jleung@se.cuhk.edu.hk)

## IFORS Prize for OR in Development

Submissions are invited of papers describing a practical OR application in a developing country, related to education, health, water, technology, resource use, infrastructure, agriculture, environmental concerns, etc.

Enquiries should be sent to the Prize Committee Chair:  
Dr. Subhash Datta, Director  
Jaipuria Institute of Management  
1 Bambala Institutional Area  
Pratap Nagar, Jaipur 302033 India  
e-mail: [subhash.datta@gmail.com](mailto:subhash.datta@gmail.com) or [sdatta@jimj.ac.in](mailto:sdatta@jimj.ac.in)

## Software and Book Exhibition

Companies are invited to exhibit their books, products and software that have relevance to Operational Research. Potential exhibitors should contact the Conference Secretariat.

## Important Dates

Deadline for contributed abstracts:  
15 December 2010  
Deadline for invited abstracts:  
15 January 2011

## About Melbourne

With a population of over four million, Melbourne is Australia's second largest city. It is regarded as the cultural and fashion capital of Australia and renowned for its fine restaurants.

It is a true multicultural city with more than one quarter of Melbourne's inhabitants being born overseas. Melbourne is one of the great cities of the world. Its unparalleled attractions are its gardens and parklands, food precincts, arcades and great sporting facilities.

## Meetings Calendar

### New Zealand

#### **45<sup>th</sup> Annual Conference of the Operational Research Society of New Zealand**

29 – 30 November, 2010, Auckland

<http://www.orsnz.org.nz>

### Asia Pacific

#### **Second South Pacific Conference on Mathematics**

30 August – 3 September 2010, Noumea, New Caledonia

<http://pages.univ-nc.nc/~bonnel/spcm-2010/confspcm10.htm>

### International

#### **24<sup>th</sup> European Conference on Operational Research**

11 – 14 July 2010, Lisbon, Portugal

<http://www.euro2010lisbon.org>

#### **Triennial Symposium on Transportation Analysis**

20 – 25 June 2010, Tromsø, Norway

<http://www.sintef.no/Projectweb/TRISTAN/>

#### **Winter Simulation Conference**

5 – 8 December 2010, Baltimore, USA

<http://www.wintersim.org>

#### **ALIO-INFORMS Joint International Conference**

6 – 9 June 2010, Buenos Aires, Argentina

<http://meetings.informs.org/BuenosAires2010/>

#### **INFORMS Annual Meeting**

7 – 10 November 2010, Austin, USA

<http://meetings.informs.org/Austin2010/>

#### **3<sup>rd</sup> Meeting of the EURO Working Group on Stochastic Modelling**

7 – 9 June 2010, Nafplio, Greece

<http://users.uoa.gr/~aburnetas/stochmod10/>

#### **American Control Conference**

30 June – 2 July 2010, Baltimore, USA

<http://www.a2c2.org/conferences/acc2010/>

#### **3<sup>rd</sup> Madrid Conference on Queueing Theory**

28 June – 1 July 2010, Madrid, Spain

<http://www.mat.ucm.es/~mcqt/confe10/conf10.html>

#### **International Conference on Research in Air Transportation**

1 – 4 June 2010, Budapest, Hungary

<http://www.icrat.org>

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The ORSNZ web site is <http://www.orsnz.org.nz>. Email contact: [secretary@orsnz.org.nz](mailto:secretary@orsnz.org.nz).

To apply for membership or buy subscriptions, see the application form on our web site, and mail it to: Membership Secretary, ORSNZ, PO Box 6544, Wellesley Street, Auckland, NZ.

# Do Risk Analysis with the DecisionTools Suite 5.5



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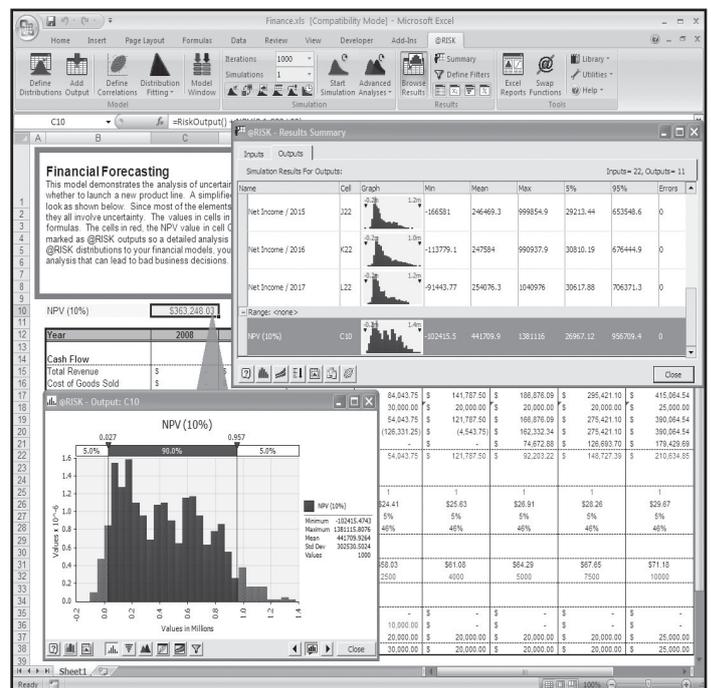


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