

asor news

February-March 2015

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Upcoming OR Seminars

ASOR Seminars

18 March 2015: Stefano Penazzi (U. Bologna, Italy)

15 April 2015: Axel Bender (DSTO, Adelaide)

AMSI/ANZIAM National Seminars

For information about these events, visit <http://www.amsi.org.au/index.php/research-a-higher-education-mainmenu/access-grid/national-seminar-series>.

ASOR Melbourne Annual General Meeting

The ASOR Melbourne AGM will be held on **18 March 2015 in Room 8.8.13, RMIT City Campus, at 5pm**. Reports will be presented and the election of office bearers will take place. A teleconference line will be established for interstate members. The AGM will be followed by a seminar by Stefano Penazzi from U. Bologna (see info later in this Newsletter).

ASOR Recent Advances

The ASOR Recent Advances took place on Monday 9 and Tuesday 10 February, and was a resounding success. It was video-conferenced between six sites (RMIT, UniSA, NICTA Canberra, UTS, QUT and U. Newcastle).

Steve Chapman from NICTA in Canberra was instrumental in getting the videoconferencing systems set up, and was ably assisted by IT staff at all of the other sites. ASOR thanks them for their efforts.



Setting up on Day One



Kate Smith-Miles' post-keynote Q&A



Moshe inches closer to victory over InfoGap, using a slide conveying a strong claim on best diagram of the conference



Andrew Mason heads up the NZ contingent in Melbourne

Oliver Cibula was awarded the best student presentation prize (a \$250 cheque) for his talk “Class formation and multiple courses sequencing” that was broadcast from Sydney. Special mention will also be made of **Hamid Mokhtar**, whose talk “Recursive cube of rings as a Cayley graph for interconnection networks” was not only a very well-delivered final presentation of the conference, but arguably had more brain-exploding potential than any other final presentation at a conference in ASOR’s history.

The OR Society of New Zealand’s **Abraham Zhang**, **Andrew Mason** and **Anthony Downward** were warmly welcomed in Melbourne and took part in Recent Advances with ASOR’s financial support. Andrew, along with **Kate Smith-Miles** and **Yakov Zinder**, provided keynote presentations during the conference.

In total we had 28 presentations over the two days, plenty of interesting discussions, and one ASOR National General Meeting.

ASOR in Canberra

Hussein Abbass

It is our pleasure to announce that the ASOR ACT chapter has been re-established and had its first general meeting on 23 February.

The chapter would like to invite all OR practitioners and academics within the ACT and neighbouring areas to take

part in the chapter activities. Keep an eye on the ASOR mailing list and/or drop Prof. Hussein Abbass (ASOR-ACT Chairperson) an email at h.abbass@adfa.edu.au.

ASOR in Sydney

After the success of Recent Advances, some Sydney-based OR people have indicated an interest in re-establishing an ASOR branch in Sydney. Some action on this issue is expected over the next few weeks. If this interests you, please contact Simon Dunstall (see back page) or **Yakov Zinder** (Yakov.Zinder@uts.edu.au).

ASOR Seminar – March 18

Stefano Penazzi from University of Bologna will deliver the next ASOR Seminar broadcast over video from Melbourne to other participating sites including rooms in Canberra and Newcastle.

Issues, challenges, models and tools for the design, management and control of job-shop manufacturing system in food industry, Stefano Penazzi, Riccardo Accorsi, Simon Dunstall, Emilio Ferrari & Riccardo Manzini.

The food processing industry is growing with retailing and catering supply chains. Efficiency, safety, quality, service level and, sustainability are key objectives in both food production and distribution systems. In particular, with the raising complexity of food product to match consumers requirements and food habits, the food production system are progressively shifting from processing line to processing job-shops as complex manufacturing systems in presence of multiple items (i.e., food, toppings, dressings, ingredients), resources and machines, and complex working cycles. Generic working cycle is realized across multiple tasks (i.e., operations), carried out by different human or automatic resources in multiple working stations. These systems present several storage and buffering areas and many assembly tasks, which are critical for perishable products sensible to environmental and physical stresses. Logistic efficiency, cost reduction, food quality, food safety are then key goals in managing the food production system.

The design and control of food job-shop production system involves long and mid-terms strategic decisions (1), e.g., the plant layout, the number of machines or working stations, mid and short terms tactical decisions (2), e.g., the planning of ingredients purchasing, the production planning, and operational decisions (3), e.g., the tasks scheduling constrained by capacities, priority, working cycle precedence, safety limitations. The aim of the planners is to fulfill the food demand and the service level minimizing the production and logistic costs,, the environmental impacts,, by controlling the residual shelf life and the product quality and safety .

This study presents an original conceptual framework for the integrated design, management and control of a job-

shop production system in food industry. The framework is based on the development and application of different modelling and solving approaches and techniques. In particular, a simulation based supporting decision model is proposed. A case study from an Italian food catering company is illustrated.

ASOR Brisbane News

Andy Wong

Year 2014 was a fruitful year for the Queensland Branch. **Colin Eustace** of Aurecon presented a seminar after our AGM in April. He demonstrated the importance of optimisation using quantitative economic analysis rather than rules-of-thumb and ad-hoc decision making. **Robert Burdett** of the Queensland University Technology gave a seminar on the planning techniques for large scale earthworks in September. A "block theoretic" approach that provides an integrated solution consisting of an allocation of cuts to fills and a sequence of cuts and fills over time was presented. **Matt Herbert** of Biarri presented a talk with title *A Multicommodity Network Flow Approach to Coal Train Crew Scheduling* in October. The focus was on the problem of assigning a pre-made crew roster to a pre-agreed train plan, to improve utilisation.

All these seminars had been recorded and uploaded to Youtube (<https://www.youtube.com/user/AusORSoc>), allowing members and non-members to watch the presentations at their own suitable time. We believe that Youtube is an important platform for promoting operations research and ASOR.

Collaboration with Access Grid in February, some of our Queensland members participated remotely in the Health Systems Modelling Workshops 2014, hosted by the Florey Institute and ASOR. This was achieved using the Access Grid facilities at QUT, linking into an Access Grid room at RMIT. The seminars were of particular value to our attendees, providing a broad coverage of health systems modelled using discrete event, system dynamics and agent-based modelling.

Our Annual Dinner held in late November was an enjoyable evening for our members and their partner. The Queensland Branch is looking forward for another exciting year in 2015.

ASOR WA News

Lou Caccetta

ASOR is active in Perth, with Lou Caccetta, Lou Giannini and Volker Rehbock heading up the ASOR branch.

This report details three recent meetings (June, September and November) of the WA Chapter of ASOR. All three meetings were well attended and all attendees enjoyed the presentations and the discussions that followed. *Seminar abstracts in italics.*

James Marshall (Director – Analytics & Simulation, AECOM) addressed the Branch in June 2014. He spoke on *Modelling Scheduled Rail Operations Within a Dynamic Mine to Port Supply Chain Simulation*.

Due to planned increases in coal exports from mines in the South West of Western Australia, upgrades to supply chain infrastructure were required. In particular the existing single track railway connecting the mines in the Collie region to the South West Mainline and Bunbury Port were likely to require additional passing loops and sections of dual tracking.

Brookfield Rail, the below rail owner, commissioned AECOM to advise on the likely rail upgrades that would be required. AECOM developed a discrete event simulation model of the supply chain however, unlike traditional pit to port models, trains could not operate on a 'run when ready' basis. Brookfield Rail operates the railway on contracted, scheduled paths for a variety of users and the model needed to reflect this to provide realistic capacity results.

The model was used to recommend capacity upgrades that reflected realistic running of the railway without negatively impacting on other rail users. The simulation was developed to be flexible enough to dynamically model terminal operations at the mine and port whilst interfacing with the scheduled rail operations.

Emma Smith (Senior Consultant Statistician, Data Analysis Australia Pty Ltd) addressed the Branch in September 2014. She spoke on *Knowing the Ropes - Simulation of Port Shipping*.

A large number of activities in a shipping Port, from the perspective of the Harbour Master, can be considered as random processes. This includes the arrival times of the vessels themselves, the attributes of the arriving vessels, and the time they will need to spend at the berth to complete the loading or discharging of their cargo. The impact that potential future expansions may have on Port resources is hence not a straightforward matter to determine.

A Port simulation model in the ExtendSim8 package, as developed by Data Analysis Australia, is presented, along with discussion on how this model can be used to provide strategic information for an example Port. The resources considered include the physical characteristics of the Port, such as channels and berths, as well as the human resources required to facilitate vessel travel and berthing, and the relationships between resources. A simulation approach to this problem has many advantages, but there are some important limitations to keep in mind.

John Henstridge (Managing Director / Principal Consultant Statistician, Data Analysis Australia Pty Ltd) addressed the Branch in November 2014. He spoke on: *The Mathematician as an Expert: The Truth, the Whole Truth and Mathematics.*

Mathematicians regard themselves as experts in various problems such as analysis of data and modelling. It was clear to earlier mathematicians who had a focus on solving real life problems. Figures like Fisher and Box were classic examples of such generalist statisticians. Today there is greater specialisation in our profession, so there are individuals and indeed institutions that specialise in one area and can be very weak on others. This is often described as focusing on a particular expertise.

It is appropriate to ask whether, in focusing on specialist expertise, we have lost our strength as experts in solving problems. I would argue that, as a profession, we have to some extent lost the excitement that comes from solving significant real world problems, and this has been to our detriment in attracting younger members.

In this talk I draw from several examples of my own work as a legal expert witness to illustrate that statisticians are indeed well equipped to be valuable experts. The legal context has very clear expectations of what an expert is and how they are expected to work. They have a far less clear view of what a mathematician is. While it is not reasonable for much of our work to be of this nature ("professional expert witnesses" are somewhat suspect), it does provide a vision of how we might see ourselves.

Recently a new web page has been set up for WA: <http://www.asor.org.au/links/wa>, and a link to the membership application is on this page.

People Rumours and News

Gaurav Singh has moved on from CSIRO, to head up a research group in BHP Billiton. Other departures from CSIRO include **David Sier** (see below) and, within a few weeks, **Geoff Robinson**, both retired. **Irina Dumitrescu** resigned from IBM and has moved to the US, and rumour has it (well, LinkedIn says) that **Heng Soon Gan** has also departed from IBM and is now with Melbourne-based startup RosterRight.

David Sier Retires from CSIRO

Simon Dunstall

David Sier retired from CSIRO in November 2014, after just over 20 years at the organisation. David was a founding member of the CSIRO Operations Research group, back in the early 1990's, along with **Graham Mills**, **Mark Westcott** and **Mohan Krishnamoorthy**.

I asked Mohan Krishnamoorthy to reflect on working David Sier, and Mohan writes: *I joined CSIRO as a Research Scientist in January 1992. I was the third member of the newly forming Operations Research (OR) Group -- Graham Mills and Mark Westcott were the other two who were already there. Within a month of me joining, the OR Group, David Sier joined the group, from RMIT. What struck me immediately was his attention to detail. I thought I was neurotic about how presentable a*

document had to look, how well-coded and documented a computer program had to be, how appropriately chosen the fonts on a PowerPoint presentation had to be. I had to think again. I wasn't quite so neurotic and fastidious at all, in comparison to David. His LaTeX documents would have a million definitions for everything from line spacing to subsubsubheading spacing and font. Everything had to be just right. Perfect. He would leave no stone unturned to ensure that everything was neat and orderly. There were days when we would both work on developing a piece of code or a GAMS model or a LaTeX document. At the end of the day, he would often say, "Leave it with me. I will polish it off at home at night," something that would simultaneously worry me -- because he ought not to work at home -- and leave me with a feeling that my contributions weren't polished enough. The following morning, I would see what he had done overnight and confirm that indeed, my contributions the previous evening weren't polished enough. He would have documented the code, indented the GAMS models appropriately, added more appropriate headers to the LaTeX document, etc. The finished work would then be extremely professional, clean and... err... polished. And so, if there is one phrase that I would use to summarize David and his approach to his work and life, it would be "extremely polished." This is his approach to work and also to many aspects of his life -- as evidenced by his interests in design, architecture, books, literature, music and woodwork. It was always a pleasure interacting with him and I learned much from him just by observing him.



Time has been kind to David Sier, but not quite this kind: this is David at some time in the late 1990's.

David worked on projects with many well-known corporations and agencies: Boeing, South Australian Ambulance Service, Fuji Xerox, RTA NSW, Cathay Pacific, Murray Goulburn, BlueScope Steel, and the Hunter Valley Coal Chain Logistics Team amongst many. David was probably one of the very earliest in Australia to see and act on the potential of OR and statistics as tools for improving health systems, and he worked with many hospitals and health networks in Victoria between the late 1990s and 2014. He also made a great contribution to research into aspects of social services and social welfare, as part of CSIRO's DHS/Centrelink research alliance.

David had a major health scare a few years ago, when he was diagnosed with cancer. Happily, the kitchen sink was thrown at this illness, and David made a full recovery. The treatment was arduous and took time, but seemed to have no lasting effect on his warm personality, sense of humour, or care for others. David was the confidant, mentor and friend of many people.

David's wife Fiona and son Dan are unquestionably the centre of his life. Nevertheless, David also loves his cars (through the 2000s: red Alfa Romeos), DIY and woodworking, good conversation, and most of all, music. In the 1980s, before marrying Fiona, David shared a house with John Schumann from Redgum, which is a band best known for their song *I was only 19*. David and John attended a Midnight Oil concert during this time, and through some means or other, ended up back at the house with Midnight Oil playing an acoustic gig in the lounge room well into the early morning. David and I share many music interests in common, including the late Jeff Buckley. CSIRO politics, music and house renovation were the staple topics in a conversation-in-the-car-home experience that lasted many warm years.

David now volunteers three days a week at a social services NGO in the inner North of Melbourne, and is happily spending well-deserved extra time with Dan and Fiona.

An amazing free short course at TU Berlin

via Sylvie Thiebaux

Technical University Berlin, in cooperation with several other bodies, is offering a free short course entitled "*Everything you ever wanted to know about LP/MIP and real-world industrial applications*". The event runs from 28 September to 9 October 2015, consists of lectures and exercises, and participation is free. The location for the course is Zuse Institute Berlin, the intended audience is postgraduate students, lectures are by people of the calibre of M. Grötschel, B. Bixby and A. Martin, and more information can be found at <http://co-at-work.zib.de>. Applications to participate must be submitted by 1 August 2015.

OR Employment

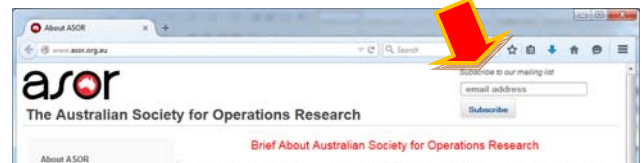
University of Sydney and University of New South Wales are advertising a joint 24-month postdoctoral research fellowship in theoretical computer science. The expected start date is September 2015. The successful applicant will conduct research on algorithms with Serge Gaspers, Joachim Gudmundsson and Julian Mestre in the USYD SACT research group and UNSW Algorithms group. The aim will be to design effective algorithms in the areas of approximation algorithms and parameterized complexity. Interested applicants should visit

<https://sydneyalgorithms.wordpress.com/postdoctoral-fellowship/>.

The **University of Sydney** is offering several Postdoc and Research Fellow positions in Medical Physics, with one of these being in Optimization. The optimization position will be funded by a Cancer Australia Grant held by Dr Ricky O'Brien (University of Sydney) and Professor Gary Froyland (UNSW Australia). See the University of Sydney website for more information.

ASOR email List

Visit the ASOR website and subscribe here ...



... to ASOR's official email list for announcements, membership matters, news and events.

The new mailchimp-hosted ASOR mailing list replaces other older lists, including `melbourne-list` which has been closed. You do not have to be a member to join our mailing list, but it will help you sleep.

ASOR Linked-In Group

Members who have accounts on LinkedIn should visit <http://www.linkedin.com/groups/Australian-Society-Operations-Research-4473262>. Our LinkedIn group covers ASOR nationally, and provides a forum for networking and discussion.

ASOR Website

Visit <http://www.asor.org.au/> for the new and improved **ASOR website**. Andy Wong has revised all that matters, and given ASOR a fresh face on the internet. The ASOR website contains a back-catalogue of newsletters, the ASOR Bulletin, membership forms, registration forms (from time-to-time when we have events) and other goodies.

ASOR Membership Renewals

Various branches have sent renewal notices to existing members. The ASOR website also holds new member forms. For renewing members, the branches would appreciate your prompt payment. This will save our tireless volunteer treasurers and/or membership officers from having to spend extra effort chasing you up.

Upcoming Australian Conferences and Events



ASOR National Conference 2015, MODSIM 2015 and DORS 2015 are being held jointly on 29 November – 4 December 2015, at a wonderful venue on the Gold Coast.



The next **International Symposium on Environmental Software Systems (ISESS)** conference will be held in Melbourne, 25-27 March 2015. See www.isess2015.org.

Web Pages of Interest

ASOR National: www.asor.org.au

STA: <http://scienceandtechnologyaustralia.org.au/>

NZ OR Society <http://www.orsnz.org.nz/>

ORS (UK): <http://www.orsoc.org.uk/>

INFORMS (US): <http://www.informs.org/>

IFORS: <http://www.ifors.org>

Optimisation in Melbourne:
<http://www.or.ms.unimelb.edu.au/>

For the latest international news, conference and jobs details see: <http://www.ifors.org/panorama/index.html>

tutOR: <http://www.tutor.ms.unimelb.edu.au>

ASOR BRANCHES AND ASOR NATIONAL

ASOR Melbourne Committee 2014

ASOR Melbourne presently welcomes members from Victoria, South Australia, NSW and the ACT.

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Secretary: Kari Stuart

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Sam Nicol

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ASOR Western Australia Committee 2014

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ASOR Canberra Committee 2015

To be advised

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