

# ASOR News — July-August 2014

## Contents

ASOR Conferences: Planning for 2014 to 2016	1
IFORS Barcelona	1
Upcoming OR Seminars	3
ASOR National Executive Changes	3
ASOR Rising Star Award	3
South Australian News	3
OR Student News	3
August 20 – ASOR Seminar in Melbourne	4
September 15 – ASOR Seminar in Brisbane	4
ASOR Bulletin Co-Editor	4
NICTA Optimisation Summer School	5
Optimisation Session at AustMS 2014	5
Upcoming Australian Conferences	5
Postdoc Position at U. Melbourne	5
ASOR Melbourne email List	6
ASOR Linked-In Group	6
ASOR Website	6
Web Pages of Interest	6
ASOR Melbourne Committee 2014-2015	7
ASOR Brisbane Committee 2014-2015	7
ASOR National Committee 2014	7

## ASOR Conferences: Planning for 2014 to 2016

**Simon Dunstall**

The ASOR National Executive has over recent meetings been discussing ASOR conferences and the pros and cons on joining with DORS and/or MODSIM (as we did in December 2013). We have decided that it is important for ASOR’s identity and ongoing relevance that we continue to have our own standalone conferences. We have also decided that we should run these in even-numbered years for two reasons: (i) so that we don’t clash with MODSIM and (ii) so that we can again join with DORS and/or MODSIM in future.

For the next three years, this leads to the following series of joint and standalone ASOR conference events:

- **In 2014** the ASOR *Recent Advances* conference will be a bigger, two day event to be held on 12-13 November 2014.
- **In late 2015** we will again join with MODSIM for their next conference in Queensland.
- **In 2016** we will hold the next *ASOR National Conference*, possibly in Newcastle.

In all of these events, we will be actively encouraging participation by members of the NZ OR Society, in person and/or over the web.

## IFORS Barcelona

**Ian Monks, City West Water (Melbourne)**

Have you ever dreamed of being in a warm Mediterranean climate surrounded by fellow math-guys talking stochastic this and regression that, hidden Markov’s and colonies of ants? Dreams became reality for 2638 of our colleagues from 74 countries in mid-July when IFORS 2014 assembled in Barcelona, Spain, a beautiful city by any measure.



*Early Friday morning outside the CCIB conference centre, which was the IFORS 2014 venue in Barcelona*

The opening session on Sunday, July 13 was followed by a reception at the magnificent Museu Nacional d’Art de Catalunya.

Monday sessions included presentations from the finalists for the IFORS Prize. As my own interest is the application of OR to business practice, these presentations were of particular interest. Presentations included optimised resource planning of emergency

crews in China resulting in more lives saved more quickly, re-locating fire stations in Santiago improving response times, deploying “portable” ambulance stations in San Paulo, production scheduling of steel slabs to improve resource utilisation and reduce Carbon emission in Chinese mills, and, policy simulation of water allocation in changing climatic conditions in Min River Basin, China.

There were 45 concurrent sessions to choose from. For me this often meant having to make hard choices and zipping between rooms mid-session. Themes included rail, airlines, telecommunications, agriculture, electricity, commerce, water and lots of theoretical studies. A new “discipline” of Behavioural Operations Research attracted many presentations. These have been collected into the new website, <http://bor.aalto.fi/>. The organisers invite OR practitioners to join their group and the BOR conversation.

The other major addition was a stream covering Big Data. The sessions that caught my eye were titled “Applying Analytics to Big Data for Driving Big Outcomes” and “Business Analytics Optimization and Big Data”. The presentation by Dries Benoit, *Improved Decision Making by Incorporating Expert Opinions into Statistical Models* looked to add “soft” data into decision making, a practice taken up in many presentations.

But it was not all “work”. Wednesday was the mandatory rest-day and while some took a city tour others headed north to the Costa Brava and a day beside the sea. My day took me to the Savadore Dali Theatre-Museum in Figueres. Now that was a surreal experience!



**Barcelona, from the Mont Juis chairlift. The conference venue is on the coast, near the centre in this photo**

On Thursday and Friday it was back to sessions. John Hearne’s presentation on his RMIT team’s work for asset protection in bush fires in Tasmania, *Optimal Deployment During an Escaped Fire*, surely must have been close to joining the Prize candidates. And Simon Dunstall presented on models for transport and water situations and highlighted the cross-industry nature of solutions. With an interest in image processing I attended a couple

of related sessions. During his presentation, Optimization Techniques in Astronomy, Mauricio Solar invited big data enthusiasts to join in the processing of the terabytes of data that will be collected from the new ALMA telescope in Chile. A very neat bit of image manipulation work was presented by Isabelle Nieuwoudt who developed algorithms to optimise the cutting of letters for road signs from plasmatic vinyl sheets for a small Cape Town company, Kohler Signs.

The daily Plenary sessions each covered a different theme.

**Margaret Brandeau**, Dept of Medicine, Stamford Uni., described the opportunities and approaches to influence health policy with applied operations research. She recommended placing complex models behind simple, familiar user interfaces such as MS Excel to help gain the confidence of the stakeholders, recommended avoiding overly complex models, to consider different solutions for different regions and the need to articulate key findings through available means to the decision makers.

**Jaume Barceló** from Uni. of Catalonia spoke on analytics and the art of modelling. He posed the question “Was Johannes Kepler a precursor of Analytics?” He described how Kepler used the 30 years of data collected by Tycho Brahe and worked for 10 years to solve the riddle of the basic structure of the solar system. (Neat stuff.) And, 72 years later Newton proved the model with his laws of gravitation.

**Robert Blackburn** from BASF told of risk assessment, the impact of the Iceland volcano on BASF’s supply chain and the challenge to staff to respond. He challenged us to develop solutions that were less static and more dynamic and to consider the effect of decision on planet earth, profitability and the families dependent on the viability of the employing companies.

**Kate Smith-Miles** from Monash Uni. described her model for defining and categorising test instances used to evaluate optimisation models and where the models have their strengths and their weaknesses. Her method employs OR to measure the effective scope of models and includes tools to visualise the scope.

The organisers worked hard to make this a valuable conference for attendees. For those wanting to follow up the Conference presentations, the abstracts can be downloaded as a PDF from <http://ifors2014.org/program>. It includes contact details for the presenters.

And, if you need a hard earned working holiday where you can be intellectually stimulated, then you might like to consider EURO2015 being held in Glasgow and/or IFORS2017 will be held in Quebec City, Canada. You are sure to meet like-minded people investigating solutions to similarly challenging problems to your own.

## Upcoming OR Seminars

### ASOR Melbourne Series

**20 August 2014: Leorey Marquez** (CSIRO). *Application of Participatory Risk Assessment for Creating Disaster Risk Sensitive Shelter Plans*. 5.30pm in RMIT Room 8.9.66, and other sites by Access Grid. [See details later in this newsletter.](#)

**3 September 2014: Claus Brech**. 5.30pm in RMIT Room 8.9.66, and other sites by Access Grid.

**17 September 2014: Alysson Costa** (U. Melbourne). 5.30pm in RMIT Room 8.9.66, and other sites by Access Grid.

### ASOR Brisbane Series

**15 September 2014: Robert Burdett** (QUT). *An Integrated Approach for Earthwork Allocation, Sequencing and Routing*. 11am, QUT (Gardens Point, Brisbane), P Block Lecture Theatre 512. [See details later in this newsletter.](#)

### AMSI/ANZIAM AGR 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>.



A/ Prof Xiaodong Li from Computer Science at RMIT presenting the ASOR Seminar on 18 June 2014

## ASOR National Executive Changes

As a result of the resignation of **Natashia Boland** from the ASOR National President role, the ASOR National Executive has voted for a replacement for the remainder of the year. **Simon Dunstall** from CSIRO is the new National President, and **Patrick Tobin** from ACU takes on Simon's old role as Vice President (Admin and PR).

## ASOR Rising Star Award

The Australian Society for Operations Research (ASOR) has established a biannual **Rising Star Award** (RSA). The objectives of RSA are to:

- acknowledge and encourage promising early career researchers in Operations Research;
- help promote the advances to Operations Research due to early career researcher;
- improve the competitiveness of starting Operations Researchers in their career paths both in industry and academia.

Researchers may be eligible to be nominated if they have been awarded a PhD within five years or, if they have already submitted their PhD theses. Exceptions to the five year limit can be made to allow for significant interruptions to research development, for example, parental duties, illness or career change.

Nominations for the award can be made by any member of ASOR other than the nominee. Letters of nomination should not exceed two A4 pages and should be accompanied by the nominee's list of publications and a brief CV. In addition, documented contributions to the practice of OR in industry (e.g., testimonials from end users as to the nominated candidate's specific contributions, evidence of impact, etc) may also be attached.

These nomination materials should be addressed to Prof. Jerzy A. Filar, Chair, RSA selection committee, School of Computer Science, Engineering and Mathematics, Flinders University, [Jerzy.Filar@flinders.edu.au](mailto:Jerzy.Filar@flinders.edu.au). Electronic submissions are preferred.

**The closing date is: September 30, 2014.**

The RSA winners will be invited to present their finding at the next ASOR national biannual meeting and will receive a certificate of recognition and a cheque for \$1000.

## South Australian News

A team of researchers at Flinders University (Filar, Qin, Ben-Tovim, Thompson, Ward) began work on an ARC Linkage project entitled "*Congestion recovery and optimisation of patient flows*". The project aims to develop OR and Discrete Event Simulation models that will identify strategies for reducing congestion in Australian public hospitals. Prototype models are currently being calibrated and tested. Recently, some of the team's members (and the models' outputs) contributed to a discussion article of possible implications of proposed co-payment policy; see <http://theconversation.com/gp-co-payment-would-increase-emergency-department-wait-times-28658>

## OR Student News

Cameron MacRae

**Florian Stock** and **Cyril Beyney** completed their long internships at CSIRO during July, and have returned to Germany and France respectively.

**Sophie Dickson** has completed her PhD at The University of Melbourne. The title of her thesis is *Robust airline scheduling and disruption management*. Sophie was supervised by Heng-Soon Gan (now IBM) and co-supervised by Natasha Boland (Newcastle) and Mark Wallace (Monash). Congratulations Sophie.

**James Baglin** has finished his postdoc at RMIT and is relocating to Canada. We wish him the very best.

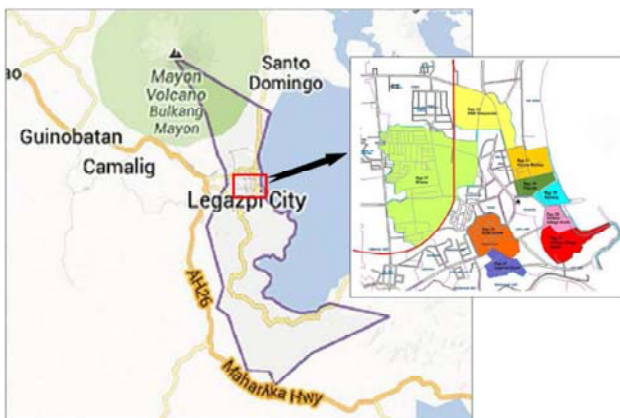
## August 20 – ASOR Seminar in Melbourne

### Application of Participatory Risk Assessment for Creating Disaster Risk Sensitive Shelter Plans

Leorey Marquez, CSIRO

Wednesday 20th August at 5.30pm, at RMIT City Campus Building 8 Level 9 Room 66 (the Access Grid Room) and other sites by AGR on request.

*Disasters disproportionately affect the poor, vulnerable, and marginalized. Improving social protection and community-driven development (CDD) interventions and linking these mechanisms to disaster risk management (DRM) increases the effectiveness of DRM programs in contributing to poverty alleviation and sustainable development, while significantly reducing disaster response costs. These interventions are especially relevant to the Philippines which has the third highest disaster risk worldwide, and with climate change, high population density and poverty conditions, the impacts of disasters are expected to increase. This presentation describes the implementation and impact of a CDD project aimed at creating Disaster Risk-Sensitive Shelter Plans (DR-SSP) for nine barangays in the city of Legazpi. The results show the importance of building capacity in civil society organizations and local government, and the effectiveness of the participatory approach in data collection, risk assessment, and disaster planning.*



## September 15 – ASOR Seminar in Brisbane

### An Integrated Approach for Earthwork Allocation, Sequencing and Routing

Robert Burdett, QUT

Monday, 15 September 2014, 11:00am - 12:00pm at QUT (Gardens Point, Brisbane), P Block Lecture Theatre 512

*Planning Techniques for large scale earthworks will be discussed. To improve these activities a "block theoretic" approach was developed that provides an integrated solution consisting of an allocation of cuts to fills and a sequence of cuts and fills over time. It considers the constantly changing terrain by computing haulage routes dynamically. Consequently more realistic haulage costs are used in the decision making process. A digraph is utilised to describe the terrain surface which has been partitioned into uniform grids. It reflects the true state of the terrain, and is altered after each cut and fill. A shortest path algorithm is successively applied to calculate the cost of each haul, and these costs are summed over the entire sequence, to provide a total cost of haulage. To solve this integrated optimisation problem a variety of solution techniques were applied, including constructive algorithms, meta-heuristics and parallel programming. Extensive numerical investigations have successfully shown the applicability of this approach to real-sized earthwork problems.*

## ASOR Bulletin Co-Editor

ASOR Bulletin is the refereed journal of ASOR, and is published electronically. The aim of the ASOR Bulletin is to publish high quality articles on new methodologies and solution approaches to complex problems in the application of Operations Research, industrial engineering, management system, decision science, and related fields.

After a fruitful and appreciated stint as a co-editor of ASOR Bulletin, **Paul Corry** has recently resigned from this position. **Paul Gaertner** (as the other current co-editor) and the ASOR National Executive are seeking expressions of interest in a co-editorship position from ASOR members. Expressions of interest, in the form of a short email, should be sent to direct Paul Gaertner or Simon Dunstall (using the contact addresses found on the last page of this newsletter).

## NICTA Optimisation Summer School

Via email from Toby Walsh at NICTA

**NICTA 3rd International Optimisation Summer School – Kioloa, New South Wales, Australia – January 11th to 16th 2015**



**Call for Participation** (<http://tinyurl.com/optschool>)

Spend a week by the beach learning about the latest optimisation technologies. How can you help a business reduce its costs? Or reduce their carbon footprint? Or do both? The school is sponsored by the Optimisation Research Group of NICTA (<http://org.nicta.com.au/>). The school will focus on solving large scale combinatorial optimisation problems in practice. The school is intended for undergraduate students (3rd year or later), masters or early stage PhD students. Every undergraduate participant will be assigned an individual mentor.

Topics covered include: introduction to constraint programming, modelling, integer programming, column generation, uncertainty, vehicle routing, scheduling, supply networks and research skills. Lecturers include Simon Dunstall, Phil Kilby, Pascal van Hentenryck, Peter Stuckey, Mark Wallace and Toby Walsh.

### Registration

The registration page is open now and applicants will be considered as they are received. Undergraduates are free. Yes, a week by the beach paid for with fun and games! Postgraduates need pay just \$250 which covers 5 nights accommodation, all food and drink, and the coach transfer from Sydney.

**Organizer: Prof. Toby Walsh, NICTA and UNSW.**

**Local information:** The School will again be held at ANU's beautiful seaside campus at Kioloa, near Bawley Point on the south coast of New South Wales.

## Optimisation Session at AustMS 2014

Via email from **Andrew Eberhard, Regina Burachik, Charl John Ras, Matthew Tam**

The 8th Australian New Zealand Mathematics Convention will take place on the campus of the University of Melbourne, from 8th–12th December, 2014

(<http://www.austms2014.ms.unimelb.edu.au/>). It is our great pleasure to invite you to participate in the special session "Optimisation" and hope that you will agree to present a 25-minute talk. We are pleased to announce that Professor Jong-Shi Pang from the University of Southern California has agreed to be a keynote speaker for our session. Professor Pang was a winner of the 2003 George B. Dantzig Prize awarded jointly by the Mathematical Programming Society and the Society for Industrial and Applied Mathematics for his work on finite-dimensional variational inequalities, and a co-winner of the 1994 Frederick W. Lanchester Prize awarded by the Institute for Operations Research and Management Science.

This special session will focus on developments in computational techniques, new theory and applications of both continuous and discrete optimisation/control.

Please do encourage participation of your postdocs and doctoral students at our special session. PhD students who are AustMS members, who are giving a conference talk and who are travelling to the meeting from outside Melbourne may be eligible for a travel costs subsidy. An online form for PhDs to claim this subsidy will be available soon on the conference website. Applications will close on September 26.

If you do agree to present, you will need to register before 26<sup>th</sup> of September in order to obtain the early bird registration. Registration and abstract submission closes on November the 17<sup>th</sup> so one can either submit an abstract when you register or at a later date via the conference registration web pages.

## Upcoming Australian Conferences

**ASOR Recent Advances 2014.** 12-13 November 2014, RMIT City Campus, Melbourne.

**AustMS/NZMS 2014 (8th Australia – New Zealand Mathematics Convention).** Melbourne, December 8-12, 2014. See <http://www.austms.org.au/tiki-calendar.php?calitemId=521>

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

**MODSIM 2015.** Incorporating DORS and ASOR. 29 November – 4 December 2015.

## Postdoc Position at U. Melbourne

**Position: Researcher or Senior Researcher**

**Skills: Stochastic Optimization**

We have an opportunity for a Research Fellow / Senior Research Fellow to develop methods and tools to optimize the delivery of environmental flow allocations in

regulated river systems. The position is part of a 3-year ARC Linkage project and sits within the Environmental Hydrology and Water Resources Group within the Department of Infrastructure Engineering, University of Melbourne.

For full details on the position and how to apply, visit <http://jobs.unimelb.edu.au/caw/en/job/882550>. Applications close September 7, 2014

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## ASOR Melbourne email List

For ASOR Melbourne members, if you need to update your details for our mailing list, [melbourne-list@asor.org.au](mailto:melbourne-list@asor.org.au), visit the web page at [http://asor.org.au/mailman/listinfo/melbourne-list\\_asor.org.au](http://asor.org.au/mailman/listinfo/melbourne-list_asor.org.au), where you can maintain your information, subscribe or unsubscribe.

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## ASOR Linked-In Group

Members who have accounts on LinkedIn should visit <http://www.linkedin.com/groups/Australian-Society-Operations-Research-4473262>, which covers ASOR nationally.

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## ASOR Website

At <http://www.asor.org.au/>, click through to Melbourne or Queensland chapters and see up-to-date websites for ASOR's most active chapters. The ASOR Melbourne website contains a back-catalogue or newsletters, membership forms, registration forms (from time-to-time when we have events) and other goodies.

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## Web Pages of Interest

ASOR National: [www.asor.org.au](http://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>



*More Barcelona – this is part of Barceloneta, an area rapidly becoming a tourist village, but which was originally home to fishing families. Barceloneta lies between the redeveloped Barcelona port and the 1992 Olympic Village.*

## ASOR Melbourne Committee 2014-2015

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**Alan Lee (ACT Student Rep)**

(email TBA)

## ASOR Brisbane Committee 2014-2015

**President:** Andy Wong (QUT)

**Secretary:** Kari Stuart (AECOM)

**Treasurer:** Brad Casey (QUT)

**Committee Members:** Monica Barbu (Aurizon), Kai Helge Becker (QUT), Paul Corry (Aurecon), Erhan Kozan (QUT), Sam Nicol (CSIRO)

**Student Reps:** Tony Cox (QUT) and Belinda Spratt (QUT)

## ASOR National Committee 2014

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**STA (“FAST”) Representative — Natasha Boland**

**Committee:**

Tim Surendonk (DSTO);

Paul Corry (Aurecon);

Kari Stuart (AECOM)

**Newsletter Editor — Simon Dunstall**