

## From the Editor



One of the first details you would probably notice with this issue is the ISSN number that appears in the masthead. It will please you to know that the electronic version of the IFORS News will henceforth sport its ISSN.

Another publication news that has been greeted with much jubilation is the ITOR indexation by the ISI. Keep in mind then that the ITOR impact factor will be available by December 2011.

IFORS 2011 has just been concluded and we here feature three accounts: one from a veteran conference attendee, a newbie, and from one of the organizers himself. See for yourself how different experiences and backgrounds led to very similar impressions! The winners of the IFORS Prize grace the OR for Development Section, which also features two very interesting articles on real-life OR applications for development.

Our featured articles on how OR is used in two very different operations, in a winery and in an archeological project, attest to the flexibility of OR. Also featured is the potential role of OR in disaster management coming from our colleague from Japan, the country that had suffered a lot from a devastating tsunami. It is timely that we received an invitation from the International Emergency Management Organization which we are putting before you for consideration.

I am sure you will have your own views on the thought-provoking points raised on the use of the term "Analytics" by Heiner Muller Merbach and "Women in OR" by Nair Abreu. I can print your reactions in the next issue - please send them to [news@ifors.org](mailto:news@ifors.org).

This issue gives a glimpse of recently concluded OR conferences in Amsterdam, Kiev, Medan and St.Petersburg - through the eyes of our correspondents who never fail to send an article for IFORS News. We also feature here two societies - newly-accepted Estonia (welcome!) and the Spanish society which incidentally, is hosting IFORS2014 (thank you!).

You will also read about other IFORS committee activities and the activities of its member societies. I do hope your contributions will keep coming. It is the only way by which we can provide an idea of how vibrant the international OR community is!

**Elise del Rosario**  
<[elise.del.rosario@stepforward.ph](mailto:elise.del.rosario@stepforward.ph)>

Reproduction of materials printed here is welcome. We do request that the source, IFORS News, be acknowledged.

## What's Inside

### 2 Editorial .....

- Are Women Really Recognized As Researchers in OR?
- Analysis and Synthesis

### 4 Conferences .....

- European Combinatorialists Meet in Amsterdam
- Asian Meets European OR at InteriOR 2011
- Kiev Summer School Features OR
- Game Theory and Management in St. Petersburg

### 6 IFORS 2011 .....

- IFORS 2011: A Huge Success
- World OR in Melbourne
- Reflections of an IFORS Conference First-Timer

### 10 IFORS Activities .....

- New IFORS VP for EURO
- IFORS President and VP Nominees
- XVI ELAVIO Summer Inst IFORS Fellow
- On Line Resource on Developing Countries
- EURO Distinguished Service Medal 2012
- EURO Excellence in Practice Award 2012
- EURO Gold Medal 2012
- 2012 UPS George D. Smith Prize
- 2012 Edelman Award

### 13 Featured Members .....

- New Member EstORS of Estonia
- IFORS 2014 Host SEIO of Spain

### 15 Features .....

- CSIRO Research Into Wine Supply Networks
- Natural Disaster Mitigation Policy in Japan
- Improving Living Conditions in Rural Anatolia

### 21 OR in Development Section .....

- 2011 IFORS Prize for OR in Development
- Balaban Valley Project
- OR in Food Banking

### 24 Book Review .....

- Duckworth Lewis

### 25 Publications .....

- The Making of EORMS
- EURO Announces New Journals
- IFORS News Granted an ISSN
- ITOR indexed by ISI

### 29 IFORS Board of Representatives Meeting Minutes

## Are Women Really Recognized As Researchers in OR?

Nair Abreu <nairabreunova@gmail.com>



It was with great pleasure that I received the invitation from Elise del Rosario to write the Editorial of this new issue of IFORS Newsletter. During the almost 55 years of IFORS and, among 19 presidents, Elise

was the first and only woman to preside over our Society. From this simple observation, the theme of this Editorial could be none other than that dedicated to women in OR-Science.

The struggle for recognition of women's contributions in various areas of science is part of human history. The figure below, transcribed from Wikipedia, illustrates how old the participation is of women in mathematics and related areas. However, up to now, Science is generally a male-dominated field, and, according to Wikipedia, evidence suggests that this is due to prejudices as well as self-fulfilling prophecies.



▲ "Woman teaching geometry" Illustration at the beginning of a medieval translation of Euclid's Elements (c. 1310 AD)

In the article "National differences in gender: science stereotypes predict national sex differences in science and math achievement", PNAS, 106 (2009) 10593-10597, Nosek, B.A. et al claim that - the sex differences in

math and science achievement are shaped by socio-cultural factors. Also, they affirm that according to Hyde, J.S. et al in "Gender similarities characterize math performance", Science, 321 (2008) 494-495, - in the U.S., the sex gap in math performance has been declining over time. Finally, according to Guiso L. et al, in "Culture, gender and math", Science 320 (2008), 1164-1165, - the size of the sex gap in math performance across countries was related to national indicators of gender egalitarianism. So, just out of curiosity, I decided to take a look at how women's work is being recognized in the field of OR. As well as the fact that Elise del Rosario was the only woman president of our Society, mentioned above, I discovered the following data:

*The struggle for recognition of women's contributions in various areas of science is part of human history.*

- (1) In the current IFORS Administrative Committee, 5 out of 10 members are women.
- (2) The current presidents of ALIO and EURO are women.
- (3) As we know, IFORS is divided into 4 large regional groups: NORAM, ALIO, EURO and APORS that together constitute 51 scientific societies. According to data relative to 2009, available on the IFORS Home Page, 11 are led by women (around 20% of the total). A closer look at the distribution shows that for NORAM and ALIO, which together constitute 30% of the IFORS societies, 50% of the leadership position is occupied by women. On the other hand, for the remaining 70% of the IFORS societies - in EURO and APORS - women represent an insignificant 5% of this leadership.
- (4) It seems that only INFORMS maintains an active forum devoted to Women in Operations Research: Women in OR / MS-Forum-INFORMS.
- (5) In the list of laureates, the presence of women in the areas of Mathematics and related sciences is almost nonexistent. For example, the Nobel Prize for Economics was awarded to a woman only once in 2009 and only two women received the Nobel Prize for Physics. The Fields Medal, the most important prize in Mathematics, was never awarded to a woman. What can we say about the list of laureates in OR? In our list of IFORS Distinguished Lecturers, no female name is mentioned.

To conclude this Editorial I would like to leave the readers of the News, with the following reflection: Fortunately, it seems that OR women are beginning to be recognized as OR workers, but, unfortunately, they also appear to be far away from being recognized as OR researchers. 🌐

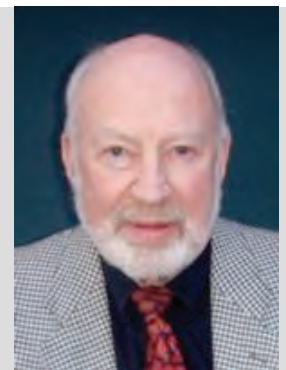
## Analysis and Synthesis – The Two Mental Activities of Design and Problem Solving

**Prof. (em.) Dr. Heiner Müller-Merbach** <hmm@bior.de>  
**Past President 1983-1985**  
**University Kaiserslautern, Germany**

INFORMS, the IFORS Member Society of the United States, started a new section, and quite a few members of INFORMS seem to be excited about it: the "Analytics Section". The section even has a newsletter: "The Analytics Lens". Its first issue was published in August 2011:  
<http://www.informs.org/Community/Analytics/Membership>.

### The analytics section of INFORMS

On p 4 of the newsletter (Vol. 1, No. 1), Michael Gorman, the Section President, states "that there is not a big difference between analytics and OR/MS, but a difference in their relative emphases. Both areas discuss the application of advanced techniques by organizations. However, O.R. clearly emphasizes the tools and techniques; analytics emphasizes more the analytical process, the tool application and integration, and their impact on organizational competitiveness and efficiency." >>





>> Their section website includes: "The Analytics Section is focused on promoting the use of data-driven analytics and fact-based decision making in practice. The section recognizes that analytics is seen as both a complete business problem solving and decision making process, and a broad set of analytical methodologies that enable the creation of business value. The Analytics Section promotes the integration of a wide range of analytical techniques and the end-to-end analytics process. Analytic methodologies include descriptive techniques (what happened), predictive techniques (what will happen), and prescriptive techniques (what should happen)." (p. 5 of the newsletter)

Gorman (p. 5) continues: "In some ways, analytics is 'what we have always done' at INFORMS - develop tools that enable better decisions, but in other ways, is what perhaps we could do better - advocating, explaining, demonstrating, socializing and delivering the benefits of O.R. to establish its central place in organizations efforts to make better decisions. Thus, Analytics and INFORMS go hand in glove, and both can benefit from the integration of the two ...". This sounds strange - it is as if decision analytics has a history and practice as long as that of OR/MS. Prima facie, it is just a new term for OR/MS- nothing more.

### Analysis and synthesis - like brother and sister

Analytics is related to the adjective "*analytic*" (or: *analytical*), to the verb "*analyse*" and to the noun "*analysis*".

However, there exists a contrasting term to *analysis*: "*synthesis*". Both terms have Greek roots.

According to Angeles (1992, p. 9), analysis means: "1. the mental (or actual) separation of something (a whole, an entity, a problem) into its component parts in order (a) to study the parts separately, or (b) to study their interrelationships, or (c) to study how they relate to the whole. 2. the process of attempting to uncover the implicit meanings and presuppositions of a system of beliefs or of a statement."

According to Angeles (1992, p. 306), synthesis means: "1. the bringing together of separate ideas or different ideologies into a whole. 2. the result of 1. 3. The combining of things (ideas, concepts, qualities) into more complex wholes from simpler things. 4. The result of 3. 5. The third phase in the dialectical process of thesis, antithesis, synthesis. See DIALECTIC (HEGEL)."

Thus, analysis means separation, (actually or virtually) cutting a whole into pieces, identification of the parts of a whole. Take a human body as an example: analysis means to separate the head from the body, the extremities from the body as well, then the organs, such as the heart, the lungs, the stomach, the liver, the kidneys etc.

Is that the end of the process? No; it is only the end of the analysis. In order to understand the whole - i.e. the human being - will require a second phase, i.e. the synthesis of the parts. The synthesis leads to the whole, to the total system, be it a human being, be it an enterprise, be it a machine, be it a family, be it a (virtual) nation etc.

The synthesis ought to bring about the understanding of the coordinated functions of the parts, i.e. of the heart, the lungs, the stomach etc.

The bipartite methodology of analysis and synthesis does not as yet have a solid foundation in OR/MS. However, it has a long tradition in German business administration ("Betriebswirtschaftslehre"), particularly in the subset of organizational design. Pioneers in organizational theory were Fritz Nordsieck (1906 - 1984), Erich Kosiol (1899 - 1990) and many others. In order to give structure to an enterprise, they started with the analysis of the "comprehensive task of the enterprise and divide it - level by level - down to the single activities". The synthesis follows in which the single activities are combined to jobs, to working groups, to departments etc. (Grochla, Gaugler 1990)

Analysis and synthesis represent the two phases of the organizational design process within German business administration.

### Application to the organizational design of a university

The bipartite methodology shall be briefly outlined by the example of the

organization of a university. The comprehensive task of universities is research and education. This task can be divided according to the single disciplines, and separated between basic and advanced sets of knowledge etc. Finally, this separation process ends up with the single elementary tasks of the disciplines. This process can be presented as a tree, starting from the root and dividing into the single branches. This is the end of the analysis.

The consecutive phase is synthesis, i.e. putting the single elements together in order to form a harmonic whole. This requires that the single elementary tasks have to be combined to working places and that these working places have to be arranged in working sections etc., i.e. chairs, faculties, departments etc.

Even if in practice the activities of analysis and the activities of synthesis are not totally separate, they are separate in principle.

### Analysis and synthesis in model design

The bipartite methodology of analysis and synthesis is quite general and not at all restricted to organizational design. It can also be applied to any kind of model design.

**Analytics**  
just a new term for OR/MS  
- nothing more.

### Example 1: Project planning

Take for instance project planning. You may first analyse the project and end up with a list of activities: the result of analysis: separation.

After the analysis, one would try to bring the single activities into a holistic structure, i.e. a network of activities: synthesis. Which activity follows which others? Which activity precedes which others? Which activity can be carried out in parallel to which others?

### Example 2: Production program optimization

Consider a production plant in which a variety of raw products are processed into intermediate semi products and which, themselves, are processed into end product.


The analysis would separate between the single raw materials, the single semi products and the single end products.

The synthesis would bring together the amounts of raw materials, semi products, and end products with the different stations of processing, expressed by means of variables and equations. The synthesis would be terminated by the computation of the production program.

### Analysis and synthesis: a general methodology

Analysis and synthesis, division and combination, separation and integration are the characteristic two phases of design. This structure can be applied to any design process, be it organizational design, be it model design, be it product design, be it contract design, be it textbook design etc. Even if the details of analysis and the details of synthesis may be quite different, the general separation between analysis and synthesis can be of important advantage in many cases of problem solving.

### References

- Angeles, Peter A.: *The Harper Collins Dictionary "Philosophy", 2nd edition. New York: HarperCollins Publishers 1992.*  
Gorman, Michael F.: *Analytics, O.R., and INFORMS – Where the Three Meet, in: The Analytics Lens, August 2011, vol. 1, issue 1, pp. 4-7.*  
Grochla, Erwin; Gaugler, Eduard (eds.): *Handbook of German Business Management, 2 volumes. Stuttgart et al., Poeschel 1990.* 



## European Combinatorialists Meet in Amsterdam

**Silvano Martello** <silvano.martello@unibo.it>  
DEIS, University of Bologna

The 24th Annual Meeting of the European Chapter on Combinatorial Optimization (ECCO XXIV) took place in Amsterdam, The Netherlands, from May 30 to June 1, 2011. The EURO Working Group ECCO (created in 1987 by Catherine Roucairol, Dominique de Werra and Alexander Rinnooy Kan) has now more than 1000 members, and is coordinated by Silvano Martello. The Advisory Board includes Jacek Blazewicz, Van-Dat Cung, Alain Hertz and Paolo Toth. The ECCO conferences are held on a regular basis (once a year, in spring) and are devoted to all aspects of combinatorial optimization. They are usually attended by about 100 participants, and nicely combine scientific works and exchange of new ideas with an exciting atmosphere. The latest conferences (2000–) were held in Capri, Bonn, Lugano, Molde, Beirut, Minsk, Porto, Cyprus, Dubrovnik, Jerusalem, Malaga.

The Scientific and the Organizing Committee of ECCO XXIV were co-chaired by Leen Stougie and Anton Volgenant. There were 71 presentations and about 90 participants. Four invited speakers delivered plenary lectures:

- Nicole Megow: Models and algorithms for scheduling under uncertainty;
- Martin Skutella: Advanced models of network flows over time;
- Gerhard-Wilhelm (Willi) Weber: Recent discrete-continues contributions to cooperative game theory and eco-finance networks;
- Gerhard Woeginger: Transportation under nasty side constraints.

The social program included a walkabout through Amsterdam, followed by a boat tour from Rokin to the IJ-kantine, where the social dinner took place. The next ECCO conference, organized by Gerhard-Wilhelm Weber and Refail Kasimbeyli (see [http://www.eccoxv.org/?page\\_id=26](http://www.eccoxv.org/?page_id=26)), will take place in Antalya on April 26–28, 2012. 🌐



Left to Right: Willi, Silvano, Leen. (picture taken by Van Dat)

## Asian Meets European OR at InteriOR 2011

**Irpan Batubara**, University of North Sumatra, Department of Mathematics, Medan, Indonesia

**Gerhard-Wilhelm Weber** <gweber@metu.edu.tr> Middle East Technical University, Institute of Applied Mathematics, Ankara, Turkey

InteriOR 2011 (<http://www.usu.ac.id/>), the International Seminar on Operational Research was held from July 27 to 28, 2011, to celebrate the 59th anniversary of University of Sumatera Utara (USU, University of North Sumatra) in Medan, north of Sumatra. Outside of Java, Medan is the largest city of Indonesia, which in turn, is the fourth most populated country in the world.

Organized by the Department of Mathematics of USU and the Indonesian Mathematics Society (IndoMS) of Aceh - North Sumatra Region, the seminar aimed to provide a forum for researchers, lecturers, educators, and students to exchange ideas, communicate, and discuss research findings and new advances in mathematics, especially in Operational Research. USU is a leading Indonesian university in OR.

*One of the memorable aspects of the conference was the traditional cultural ceremony of draping the North Sumatran scarf called the Ulos, on the shoulders of the keynote speakers – which the made the talk not only a sharing of ideas but also of cultural practices.*

Among the Keynote Speakers were: *Prof. Dr. Gerhard-Wilhelm Weber (Willi) from Turkey, who presented “The New Robust Conic GPLM Method with an Application to Finance and Regula-*

*tory System - Prediction of Credit Default and a Process Version”*; and *Prof. Dr. Masaji Watanabe from Japan, who talked about “Modeling and Simulation for Microbial Depolymerization Processes of Xenobiotic Polymers”*. Seminar participants came from the four provinces of Sumatra, namely: North Sumatra, Aceh, West Sumatra and Riau, who listened to more than the 30 papers presented in the Proceedings.

One of the memorable aspects of the conference was the traditional cultural ceremony of draping the North Sumatran scarf called the Ulos, on the shoulders of the keynote speakers - which the made the talk not only a sharing of ideas but also of cultural practices. There was support for the idea to start other Operations Research summits and annual “Summer Schools”, for the benefit of the young people who played a big role in the preparation and conduct of the conference activities. Conference feedback from the participants who are just beginning their careers showed how the conference has enriched them personally and professionally, especially where it required the use of English, presentation and organizing skills. A lot of the participants also expressed how the conference re-awakened in them the interest in the methodologies and the discipline of Operations Research. Other positive comments on InteriOR were given days after, particularly on Facebook.

The rector of USU, Prof. Dr. Syahril Pasaribu, hailed InteriOR 2011 as a model of collaboration and friendship among individuals, universities and academic organizations from different parts of the world. 🌐





# AACIMP Kiev Summer School Features OR for the First Time

Kate Pereverza and Inna Borshch, Students Science Association, National Technical University of Ukraine "KPI", Kiev, Ukraine  
Gerhard-Wilhelm Weber <gweber@metu.edu.tr> Institute of Applied Mathematics, METU, Ankara

*Another great benefit of the School is the connection established among young international researchers, who hopefully, will be able to organize themselves into research teams that will have the advantage of diverse perspectives, research methods, and educational training.*

The Summer School "Achievements and Applications of Contemporary Informatics, Mathematics and Physics" (AACIMP), an annual project aimed at promoting science among youth, organized by students for students, had "Open Minds - Open Frontiers!" as its theme. Encouraging its participants to turn new knowledge into new ideas and opportunities, the 2011 Summer School introduced a new stream on Operational Research.



▲ Summer School participants pose for posterity

The stream offered 8 to 12 hour courses by tutors from different countries on various topics as follows: Prof. G.W. Weber (Middle East Technical University, Ankara, Turkey) on "Financial Mathematics"; Dr. Erik Kropat (Institute for Theoretical Computer Science, Mathematics, and Operations Research, University of the Bundeswehr Munich, Germany) on "Data Mining and Knowledge Discovery in Large Databases"; Dr. Sirma Zeynep Alparslan-Gök (Süleyman Demirel University, Department of Mathematics, Isparta, Turkey) on "Cooperative Game Theory and Operations Research Games"; and Prof. Aleksander Vasin (Operations Research Department, Lomonosov Moscow State University, Russia), on "Evolutionary Games". Several OR specialists from USA, Italy and Ukraine also contributed to the stream further enriching the course content.



▲ Willi Weber delivers his course to the OR stream participants.

The OR stream attracted some 21 participants, who came from different countries. The general reaction to the stream could not have been better expressed by 22-year old Bogdan Kyryliuk who said, "Summer School with its informative program gave me an opportunity to listen to lectures of outstanding tutors and get inspiration for further research in the sphere of financial mathematics, global optimization and data mining. Being given some practical tasks to do, I gained a lot of experience in solving real problems".

Other more general comments on the School follow. From "Summer Maryna Dushenok, a third year student of the Faculty of Linguistics of KPI: "The Summer School gave me an opportunity to make contacts, obtain skills of working in a team, hone my communication and English skills. Summer School made it possible for the participants to learn, travel and have fun all at the same time." Bogdan Pukalsky, a third year student of Institute for Applied System Analysis of KPI commented: "During Summer School, I got acquainted with modern educational trends in countries where scientific development is better organized. Discussing positive and negative aspects of education systems with students from all over the world was very fruitful for me. Another great benefit of the School is the connection established among young international researchers, who hopefully, will be able to organize themselves into research teams that will have the advantage of diverse perspectives, research methods, and educational training."

The AACIMP organized by the Student Science Association and the National Technical University of Ukraine "KPI" had evolved from its 2006 beginnings into a large international project with diversified multidisciplinary program where the courses are taught through lectures, seminars, workshops, and discussions within four streams: "Operational Research", "Computer Science", "Neuroscience" and "Innovative Entrepreneurship and Science of Global Challenges". For 2011, the school was participated in by 38 tutors and more than 100 participants from Ukraine, Russia, Sweden, Georgia, Iran, Lithuania, Czech Republic, Poland, France, Italy, Japan, Tunisia, USA, Turkey.

The summer traditionally takes place in August at the National Technical University of Ukraine in the Ukrainian capital of Kiev. Future AACIMPs will feature other important areas of Operations Research. Those who are interested to join as tutors and participants are encouraged to get in touch with the authors. 🌐

## Game Theory and Management Tackled in Saint Petersburg

Magarita Gladkova Graduate School of Management, Saint Petersburg University, Saint Petersburg, Russia  
Gerhard-Wilhelm Weber <gweber@metu.edu.tr> Institute of Applied Mathematics, METU, Ankara, Turkey

The Fifth International Conference on Game Theory and Management (GTM 2011, <http://www.gsom.spbu.ru/en/gtm2011/>) was held at Graduate School of Management of Saint Petersburg University from June 27 to 29, 2011. More than 110 specialists in Game Theory and its applications made their way from 15 countries to the conference.

Topics of 89 talks given during the conference included game theory and management applications in strategic and international management, Operational Research and Management Sciences, industrial organizations, marketing, financial management, resource management, theoretical and applied research on dynamic and evolutionary stochastic games, and their applications. >>



Plenary lectures were delivered as follows:

- Professor Vladimir Mazalov (Institute of Applied Mathematical Research, Russia) "Bargaining models and mechanism design",
- Professor Roger B. Myerson (2007 Nobel Memorial Prize in Economic Sciences, University of Chicago, USA) "Sequential equilibria of games with infinite sets of types and actions",
- Professor Jörgen W. Weibull (Stockholm School of Economics, Sweden) "Robust set-valued prediction in games",
- Professor Shmuel Zamir (The Hebrew University, USA) "Extending the Condorcet Jury Theorem to a general dependent jury".



▲ Myerson emphasizes a point

A first of its kind for this conference was the video plenary presentation of Prof. Martin Shubik (Yale University, USA) on "The present and future of Game Theory". Regularly featured in these conferences, the tutorial this year was delivered by Professor Georges Zaccour (GERAD, HEC Montreal, Canada) on "Dynamic games in the economics and management of pollution".

This annual conference series started in 2007 was jointly organized by the Faculty of Applied Mathematics and Control Processes (AM&CP SPbSU) and the International Society of

Dynamic Games (Russian chapter). Every year, more than half of its 80 to 100 participants and speakers come from outside the country, including but not limited to Nobel laureates such as: Prof. R. Aumann (Nobel Memorial Prize in Economic Sciences, 2005) in 2007; Professor J. Nash (Nobel Memorial Prize in Economic Sciences, 1994) in 2008; Prof. R. Selten (Nobel Memorial Prize in Economic Sciences, 1994) in 2009; and Prof. R. Myerson (Nobel Memorial Prize in Economic Sciences, 2007) in 2011. Through the active involvement of these Nobel laureates in Economics, the conference moves closer to its goals of facilitating dialogue between fundamental research in game theory and modern scientific thought in management.



▲ Weibull listens to a question

A very pleasant atmosphere, high quality of invited and contributed presentations and a lively interaction among the participants characterized GTM 2011. At the end of the conference, activities of a number of EURO Working Groups were introduced and everyone was invited to EURO XXV in 2012, which will take place in neighboring Vilnius, Lithuania

Acknowledgement: The second author heartily thanks The Association of European OR Societies (EURO) for its support which made his conference participation and service possible. 🌐



## A Huge Success

**Baikunth Nath** <baikunth@unimelb.edu.au>  
ASOR President

The 19th Triennial Conference of the International Federation of the Operational Research Societies (IFORS2011) hosted by the Australian Society for Operations Research (ASOR) in Melbourne, 10-15 July 2011, was a big success on all accounts. We had in excess of thousand registered delegates coming from 62 countries, representing all continents.

The conference had a well-developed scientific programme having over sixty streams running in 21 parallel sessions over four full days. Our keynote speakers including Professor Sir James Mirrlees, Professor Daniel Ralph and Dr Brenda Dietrich provided stimulus to the conference.

The social events and the day long excursions in middle of the conference to Sovereign Hill & Ballarat Wildlife Park and Healesville Sanctuary provided opportunities in connecting delegates. The weather wasn't the best but the company more than made up for it.

The highlights of the conference were the Gala Dinner with four IFORS Presidents (Current and past) being present, IFORS Prize for OR in Development by Dr Subash Datta, and presentation of the ASOR medal to Dr Patrick Tobin for his service to the Society.

The success comes with the good work of many people, the local organizing committee of Patrick Tobin (Chair), Simon Dunstall, John Hearne, Kaye Marion, Baikunth Nath, and Paul Lochert, and ably assisted by the professional organizers at ICMS: Patty D'Cruz and Barrie Markey. We also had additional help from our



▲ ASOR Medal presented by ASOR President Baikunth Nath with Dominique de Werra to Patrick Tobin

colleagues at IFORS and from our friends in INFORMS, in particular Elise del Rosario the IFORS immediate past president, Karla Hoffman the IFORS meetings VP and IFORS secretary Mary Magrogon.

This was the first international conference in OR in Australia. I am hopeful that you all also enjoyed the conference, as I did.

More IFORS2011 conference photos are available at <http://ifors.org/web/ifors-photo-gallery/> 🌐





# World OR: Global Economy and Sustainable Environment Takes Center Stage in Melbourne

Hans W Ittmann <hittmann@csir.co.za>

CSIR Built Environment, Pretoria, South Africa

Washington, Buenos Aires, Athens, Lisbon, Vancouver, Beijing, Edinburgh, Honolulu, Johannesburg and then... Melbourne, Australia - the venues for the past 10 IFORS conferences that I have been privileged to attend. It is hard to believe that the 19th triennial IFORS conference has come and gone! As the chair of the local organising committee of the previous IFORS conference held in South Africa in 2008, I found this conference very different but nevertheless enjoyable. This time, there was nothing to worry about or nothing that needed attention with no concerns that something will go wrong, I could just relax and enjoy the conference! I deliberately decided upfront not to try to make comparisons between the two conferences.

Travelling "down under" takes some effort, and time, while July is also winter season in Australia. We arrived in the rain and this was the pattern for the first couple of days. After mid-week, the weather became pleasant, though still a bit chilly. Since we travelled east, it took almost a week for us to adjust to the time difference. It posed quite a challenge to remain awake early in the mornings listening to presentation while your body was yearning to sleep!

As with all conferences, delegates need to register to get their programme and other paraphernalia that go with a conference. The conference colour scheme, bright red, was striking and pleasant on the eye. The welcoming function on the eve of the conference started feeling like a reunion because here you meet up with many international OR friends that you see infrequently. Meeting, interacting and socialising in this way at the start of a conference make for a great conference. Delegates also had the opportunity during this function to see and feel some of the well-known Australian animals like a dingo and a koala bear. There



▲ D. de Werra opens conference

was more than enough sushi and drinks, and everyone enjoyed themselves.

The opening session on the Monday morning was a special event, not only because the plenary speaker was Sir James Mirrlees, a Noble Prize winner, but also due to the dry humour that came through so strikingly in the welcoming words of Dominique de Werra, the current IFORS president. Although Sir James was challenged by the technological compatibility around his presentation, he was able, at least to me, to convey the message very clearly.



His presentation was titled "Optimum Choice Sets: How Tightly Should We Regulate".

Dominique reminded us of a number of Australian proverbs (i) "There is nothing more Australian than spending time in somebody else's country", and therefore he was pleased to see so many of them (Australians) in the audience!; while (ii) The Australians are unique in the world since they seem to be free of "the grass is greener on the other side of the fence" syndrome and proudly proclaim that "Australia is in fact the other side of that fence".

The second plenary session of the conference by Dr Brenda Dietrich was one of the highlights of the conference for me. She spoke about "Operations Research for a Smarter Planet" indicating how OR, through modern technology, can contribute by adding value to masses of data which are available, or can be collected with little effort, in a whole number of very practical and important spheres. The last plenary on the Friday, although very topical, was just too technical.

It is always difficult to decide which sessions to attend and for me the OR "Development Prize" presentations on the first day was hugely interesting and very relevant. Various papers were presented, addressing a wide spectrum of application areas in development. These were all of a very high standard. Some time ago IFORS initiated a survey on OR practice in the world and two sessions were devoted to this. What was disappointing was the lack of response from people in practice; nevertheless some interesting comparisons were presented.

I personally don't focus on one specific area and was therefore able to attend sessions on OR in sport, elections, humanitarian logistics and educational issues. All of these were very stimulating, but in some instances there were "no shows" of speakers, which were disappointing.

The traditional mid-week day outing is another highlight of IFORS conferences. Delegates had to choose between the Sovereign Hill and Ballarat Wildlife Park Tour or the Healesville Sanctuary and Winery Tour. We went on the latter tour and enjoyed delightful wines at the Domaine Chandon winery early the Wednesday morning! The visit to Healesville Sanctuary was challenging, since we had intermittent rain. This sanctuary cares for injured or orphaned wild animals and also hosts a wide range of Australian birds and animals. The main

attraction was the Spirits of the Sky bird flight show in the flight arena. The spectrum of parrots, birds of prey, etc. delighted the crowd with their amazing skills, a truly unforgettable experience.

During the gala dinner on the Thursday evening the delegates enjoyed the warm and wonderful hospitality of our Australian hosts. It was very fitting that the chair of the local organising committee, Patrick Tobin, celebrated his birthday on that day. My wife and I also had the pleasure of being invited to the IFORS President's Dinner on the Monday night. This was held in the Fish Bowl Room of the Melbourne Aquarium. Surrounded by a wide variety of fish in the fish tanks, we enjoyed our dinner. Mary Magrogan, secretary of IFORS, with the local hosts did IFORS proud, as usual. In the words of the IFORS president, this



▲ Participants at the gala dinner cocktails

conference reinforced the fact that "IFORS is there to combine the efforts of many OR professionals all over the world; collaboration with exchange is the only way to progress and to have a chance of solving some of the issues we are facing in the global economy and in our environment".

Australia was a new experience to most of us, with the Melbourne convention and exhibition centre a great venue for the conference, creating the opportunity to network and exchange aspects of OR, ranging from applications to more theoretical work. On the Saturday after the conference we were able to do some sight-seeing in Melbourne itself before the long flight back home on Sunday. The delay of four hours before departure from Sydney airport made our flight time back even longer but we arrived safely having enjoyed this 19th IFORS conference!

Congratulations to Patrick Tobin, Kaye Marion and the organising committee as well as Janny Leung for all their hard work to ensure a well organised conference. 🌐



# Reflections of an IFORS Conference First-Timer

*Dominik Dorsch relates experiences and impressions of his first-ever IFORS conference with the guidance and inputs of an older colleague, Gerhard-Wilhelm Weber.*

**Dominik Dorsch** <dorsch@mathc.rwth-aachen.de>, RWTH Aachen University, Aachen, Germany  
**Gerhard-Wilhelm Weber** <gweber@metu.edu.tr>, Middle East Technical University, Ankara, Turkey

I was excited at the prospect of attending my first IFORS conference in Australia. Even at the airport, I saw many familiar faces, most of whom I met in previous conferences I attended. Only at the conference did it dawn on me that the international OR community has descended on Melbourne! My first task after arriving at the hotel was to locate the conference venue. The Melbourne Exhibition Centre was hard to miss, as it was huge. Only completed in 2009, it featured impressive state of the art facilities and was conveniently close to my hotel.



▲ Melbourne Convention Centre easily accommodated all the delegates.

I found the Welcome Reception unique and showcased the Australians' candid hospitality as well as their easy and unconventional nature. Where else can you find guests being welcomed by a delegation of four typical Australian animals: some crocodiles, a dingo, a koala and, of course, a kangaroo? The official part of the conference started Monday morning. I was glad to be a bit early to meet Gerhard-Wilhelm Weber who introduced me to his vast network of friends. The chair of the committee, Prof. Dr. Patrick Tobin, welcomed the participants with a typical "G'day" while IFORS President Prof. Dr. Dominique de Werra shared a lot of proverbs in his speech, followed by aboriginal music on the didgeridoo. The first plenary of Prof. Dr. Sir James Mirrlees on "Optimum Choice Sets: How Tightly Should We Regulate?" set the tone for the conference.



▲ Domiane Chandon visit got good reviews from IFORS' Elise del Rosario, Tom Magnanti, Peter Bell, Trudy and Dominique de Werra, and Michel Gendreau

The week that followed presented a problem for me in choosing which to attend of the many presentations going on at the same time. The Programme Committee Chair Prof. Dr. Janny Leung, succeeded in arranging an impressive scientific program of 59 invited streams with approximately 1200 presentations. Since I was giving a talk on some theoretical and numerical results on Generalized Nash Equilibrium Problems, I decided to attend some Game Theory sessions. I especially enjoyed the Continuous and Non-smooth Optimisation stream, which is my area. One session I attended was dedicated to memory of Prof. Dr. Alexander



▲ IFORS President Dominique de Werra moderates Plenary session of Professor Sir James Mirrlees

Rubinov. Even if I did not know Prof. Rubinov personally, I found the speeches of his friends very moving and enlightening. The scientific program was further enriched by two distinguished and differentiated plenary talks given by Dr. Brenda Dietrich ("Operations Research for a Smarter Planet") and Professor Daniel Ralph ("Risk Trading and Capacity Expansion in Energy Markets").

Wednesday was dedicated to the non-scientific program, offering participants a choice of a visit to Sovereign Hill & Ballarat Wildlife Park or to the Healesville Sanctuary. I decided to use the time to explore the city of Melbourne and St. Kilda Beach by taking a long walk. Fortunately, the weather was mostly good that day and I even spotted a penguin at the beach. On Thursday night at the Gala Dinner, I enjoyed watching and taking part in the fun as delegates enjoyed the good food and most importantly, the excellent company.



▲ Bird Sanctuary also had the other Australian animals

Being the biggest conference I attended, IFORS 2011 provided me with an excellent opportunity to meet a lot of interesting people, who I sincerely hope to meet again in the future. My stay in Melbourne was unforgettable and I would not miss out on a chance to be back to beautiful and hospitable Australia. Altogether, it was for me a good first experience at an IFORS conference and it certainly will not be my last. 🌐





20<sup>th</sup> CONFERENCE OF THE  
INTERNATIONAL FEDERATION OF  
OPERATIONAL RESEARCH SOCIETIES

IFORS  
2014



I F O R S

International Federation of Operational Research Societies

13th - 18 th July



Organizing Committee Chair:  
Elena Fernández  
e.fernandez@upc.edu

Program Chair:  
Stefan Nickel  
stefan.nickel@kit.edu

Barcelona

The art of modeling

[www.ifors2014.org](http://www.ifors2014.org)

## IFORS VP for EURO: Goodbye Martine, Hello Elena!



▲ Elena Fernández

IFORS VP for EURO Martine Labbe, has announced that a new EURO assignment has made it necessary for her to pass on her responsibilities with IFORS to Elena Fernandez.

The new IFORS VP for EURO is Elena Fernández, Professor of Operations Research in the Statistics and Operations Research Department of the Technical University of Catalonia in Barcelona (Spain). Her research interests include discrete optimization and, in particular, on discrete location, vehicle routing and network design problems. She is also interested in stochastic discrete optimization.

She is in the Editorial Board of Computers and Operations Research, an associate editor of TOP (the Operations Research journal of the Spanish Statistics and Operations Research Society (SEIO)), and guest editor for Annals of Operations Research. An author/ coauthor of over 50 scientific papers, she has supervised a number of PhD Theses and coordinated the Spanish network on Location Analysis.

Elena has served as the OR VP for SEIO and belongs to the Women in Mathematics committee of the European Mathematical Society (EMS). IFORS members will be seeing a lot more of Elena who was appointed Local Organizing Committee Chair of IFORS 2014 to be held in Barcelona. 🌐

## IFORS President and VP Nominees 2013-2015 Presented to the Board of Representatives

As provided for by the IFORS Statutes and By Laws (Article 5, Nos. 5 and 6), a nominating Committee of the three most recent past presidents composed of Paolo Toth (2001-2003), Tom Magnanti (2004-2006) and Elise del Rosario (2007-2009) announced the nomination of Nelson Maculan and Sue Merchant for President and Vice President at Large, respectively, for the period 2013- 2015.

The Statutes provide for additional nominations as long as these are each supported by at least three IFORS members, and are received by the Secretary by December 31, 2011. In case of additional nominees, elections to the offices of President and IFORS Vice President will be by means of a three-month ballot and shall take place early in the year preceding the start of the term of office. If no candidate receives a majority of the votes cast on the first ballot, then a second three-month ballot will be held immediately between the top two candidates.

### NELSON MACULAN

Nelson Maculan is professor at the Dept. of Systems Engineering and Computer Science of the Graduate School and Research in Engineering at the Federal University of Rio de Janeiro, Brazil. Even as he supervised over 60 PhD theses and 130 MSc dissertations, he served as President of the Federal University of Rio de Janeiro, and later as National Secretary for Higher Education, then State Secretary for Education in Rio de Janeiro. He was awarded several honorary degrees, all over the world, including those from France, Chevalier dans l'Ordre National du Mérite (France), Grand-Croix National Order of Scientific Merit (Brazil), and Docteur Honoris Causa de l'Université Paris 13 (France).



He is active in the Brazilian Academy of Sciences, the National Academy of Engineering (Brazil), the European Academy of Arts, Sciences and Humanities (Paris, France), and The Academy of Sciences for the Developing World. He has served as IFORS Vice President from 1983 to 1986)

followed by a stint as President of the Association of Latin-Iberoamerican Operational Research Societies - ALIO (1988 to 1990) to which post he was re-elected from 1998 to 2000. He was also President of the Brazilian Society for Operations Research - SOBRAPO (1974 to 1976).

He recently received the "Prêmio Anísio Teixeira" award (named after an icon of Brazilian education) from President Dilma Rousseff of Brazil. The award is given every 5 years to Brazilian educators and scientists for their outstanding contribution to the development and strengthening of higher education and research institutions in Brazil.

### SUE MERCHANT

Sue Merchant started her OR career in the Ministry of Defence (Dept of Naval Operational Studies) where she spent 4.5 years working on a variety of procurement issues and studying part time for an MSc in OR. She moved to the Metropolitan Police Service in London in 1975 and remained there for 28 years in a variety of analytical and managerial roles from Senior Scientific Officer to Director of Consultancy and Information Services. She left to become an independent consultant in 2002 and since then has carried out assignments for a range of clients from the Crimestoppers Trust and the Association of Train Operating Companies to the London Fire Brigade. She belongs to a network of independent consultants known as Jigsaw.



Her connections with OR have included chairing the Heads of OR Committee for some years in the 90s, being Vice President for the UK's OR Society from 2004-2006 and then President from 2008-9.

Each year she supervises a few OR MSc students at the London School of Economics during their summer projects for clients and her OR interests lie in Problem Structuring Methods, Strategy Development and MCDA. She is keen to promote the use of OR methods in the Criminal Justice and charity sectors. 🌐



# Search for the XVI ELAVIO Summer Institute IFORS Fellow



IFORS is pleased to announce its sponsorship of a participant to join the Summer School organized under the auspices of the Latin American Association of Operations Research Societies Summer School for Young Scholars (ELAVIO). The ELAVIO Summer Institute will

be held in Vale dos Vinhedos, Garibaldi (Hotel Mosteiro), Rio Grande do Sul, Brazil, from February 5 to 10, 2012.

Sponsored by ALIO (Latin American Association of Operations Research Societies) and IFORS (International Federation of Operations Research Societies), the School is organized by the Federal University of Rio Grande do Sul (Informatics, Administration and Mathematics Institutes), Federal University of Santa Maria and Federal University of Pampa.

The School will include mini-courses and tutorials, discussion panels, and conferences on advanced topics of research interest. The participants will have the opportunity of presenting their work. The areas to be covered are (but not limited to): Optimization Multiobjective and Multicriteria, Heuristics and Metaheuristics, Mathematical Programming, Fuzzy Logic, Decision Support Systems, Artificial Intelligence, Simulation, Networks, Logistics.

Additional information may be found at: [www.inf.ufrgs.br/elavio2012](http://www.inf.ufrgs.br/elavio2012)

IFORS will cover participant's airfare from his/her country (subject to a maximum limit) while ELAVIO will provide the living expenses during the School.

If you:

- Have done work in the field of Optimization Multiobjective and multicriteria, Heuristics and Metaheuristics, Mathematical Programming, Fuzzy Logic, Decision Support Systems, Artificial Intelligence, Simulation, Networks, Logistics;
- Are at the early stage of your career;
- Can present your unpublished work and answer questions in English;
- Are highly recommended by your adviser in your area of work;
- Can comply with the requirement to report on the outcome of the activity and how it has helped you in your work,

APPLY NOW!

Submit your curriculum vitae and a two-page abstract of the work you intend to present, together with a recommendation by your adviser on or before September 30, 2011 to:

**Nair Maria Maia de Abreu**  
IFORS Vice President for ALIO  
[nairabreunova@gmail.com](mailto:nairabreunova@gmail.com)  
Telefax No. +55 21 22210781  
Phone: +55 21 22214216  
Mailing Address: Rua João Lira 106/401  
Leblon, Rio de Janeiro, Brazil  
CP 22430-210

Submissions through e-mail are acceptable. The selected applicant will be notified on November 18, 2011 at the latest. Candidates from developing countries will have an advantage in the selection. 🌐

## Call for Articles

## IFORS Website Adds On Line Resource on Developing Countries

The aim of the IFORS On-Line Resource on Developing Countries (<http://dc.ifors.org>) is to offer the OR worker all publicly available materials on the topic of Operations Research for Development. It also aims to provide a venue for people who are working in the area to share their completed or in-process work, learn from others, and stimulate comments and discussions on the work.

The idea for this project came about during the Educational Resources committee meeting at the Melbourne conference. As such, it is a work in its very early stages. The end goal can only be achieved through your contributions – you may email any committee member (see list below) with a link to the material, or the material itself for uploading in the site. Please indicate the category. The committee members will approve the material for uploading.

Chairing this Committee is **Gerhard-Wilhelm Weber** ([gweber@metu.edu.tr](mailto:gweber@metu.edu.tr)).

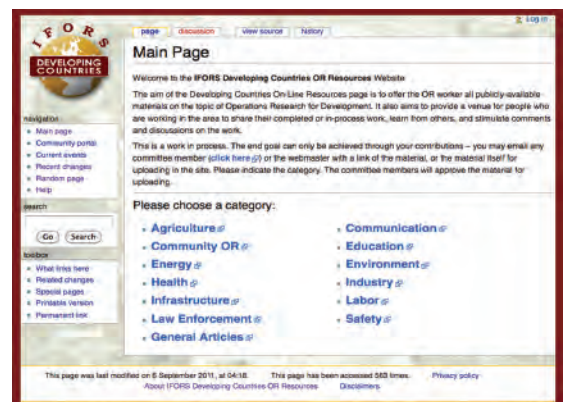
### Members are:

**Jan van Vuuren** ([vuuren@sun.ac.za](mailto:vuuren@sun.ac.za))  
**Elise del Rosario** ([elise.del.rosario@stepforward.ph](mailto:elise.del.rosario@stepforward.ph))  
**Subhash Datta** ([subhash.datta@gmail.com](mailto:subhash.datta@gmail.com))  
**Herman Mawengkang** ([hmawengkang@yahoo.com](mailto:hmawengkang@yahoo.com))  
**Halil Önder** ([onde@metu.edu.tr](mailto:onde@metu.edu.tr))  
**Linnet Özdamar** ([ozdamar.linnet@gmail.com](mailto:ozdamar.linnet@gmail.com))  
**Chandra Sekhar Pedomallu** ([pcs.murali@gmail.com](mailto:pcs.murali@gmail.com))  
**Claudia Rave** ([claudia.rave@gmail.com](mailto:claudia.rave@gmail.com))  
**Elsabet Tamrat** ([etamrat@optusnet.com.au](mailto:etamrat@optusnet.com.au))  
**Ruel Tan** ([webmaster@ifors.org](mailto:webmaster@ifors.org))  
**Ayşe Özmen** ([ayseozmen19@gmail.com](mailto:ayseozmen19@gmail.com))

Currently, the resources include 27 articles under the following categories:

**Agriculture, Communication, Community OR, Education, Energy, Environment, Health, Industry, Infrastructure, Labor, Law Enforcement, Safety, General Articles.**

Clearly, this project can make use of your participation as a contributor of articles or links! 🌐



## EURO Distinguished Service Medal 2012 Call for Nominations



The EDSM (EURO Distinguished Service Medal) is awarded for recognition of distinguished service to the Association of European OR Societies (EURO) and to the profession of OR. The award will be officially delivered during the 2012 EURO Conference (Vilnius, July 8-11, 2012).

### Eligibility

The EDSM 2012 will be given to an individual who has served the European OR community and the profession effectively for many years. No currently active officer of EURO (Executive Committee member, EDSM 2012 jury member, Organizing and Programme Committees Chairpersons of the EURO 2012 Conference) is eligible.

### Award

The laureate will receive a medal, a diploma and will be invited to all future EURO Conferences without payment of the registration fees.

### Selection process

The national member societies of EURO, the EURO Working Groups, the previous EURO Distinguished Service Medal laureate and previous EDSM jury chair are kindly invited to send nominations for possible award recipients to the EDSM jury by the deadline indicated below. Please enclose, if possible, a CV or an equivalent document. Nominations must be made in confidence (i.e. the nominee should not be informed).

The jury will evaluate the proposed candidates essentially on basis of their distinguished services to EURO and to the profession of OR.

### Jury

The members of the EDSM 2012 jury are:

**Alexis Tsoukias, (Chairperson)**

**Zilla Sunuany-Stern**

**Jan Weglarz**

**Maurice Shutler**

**Laureano Escudero**

### Deadlines

The deadline for submitting nominations is January 31, 2012.

The decision of the jury will be communicated to the EDSM laureate within March 5, 2012.

The decision of the jury will be publicly announced at the 2012 EURO Conference.

### Contact

Alexis Tsoukiàs  
CNRS - LAMSADE, Université Paris Dauphine  
75775 Paris Cedex 16, France  
tel: +33144054401, fax: +33144054091  
tsoukias@lamsade.dauphine.fr  
<http://www.lamsade.dauphine.fr/~tsoukias> 

## EURO Excellence in Practice Award 2012 (EEPA 2012)

This is an invitation for Authors to submit a paper for the above award.

### PURPOSE

The purposes of the competition are to:

- recognise outstanding accomplishments in the practice of Operational Research,
- attract more application-oriented papers to EURO Conferences,
- promote the practice of Operational Research in general.

### GUIDELINES

All interested authors are invited to submit a detailed description of an application of Operational Research, which has original features, whether in methodology, application or implementation. This may be in the form of a paper written for publication (although not necessarily published at the time of submission), a client report, or other appropriate documentation. The documentation must describe the work in a way, which illustrates how it meets the criteria outlined below. The age limit for published papers is four years. The work must not have been submitted concurrently to another competition. The application is open to Operational Research specialists from any part of the world.

### EVALUATION CRITERIA

The criteria for the evaluation of the papers are:

- scientific quality,
- relevance to Operational Research,
- originality in methodology, implementations and/ or field of application,
- a real impact to practice,
- appreciation by the organisation involved with the application.

Letters of appreciation are important.

### THE PROCESS

The jury selects a short-list of finalists who will present their work in a special session of the EURO Conference 2012 in Vilnius. There is no registration fee for one author of each of the finalist presentations. The winner will be determined by the jury at the end of the special session and will be announced by the chairman of the jury during the closing session of the EURO Conference.

### THE PRIZE

The prize for the winners is a distinct honour, and in material terms consists of:

- a certificate of excellence in OR practice for each author of the paper and for the concerned organization,
- an amount of 3.000 EUR for the authors.

### THE JURY

#### Chair

Prof. Michel Bierlaire, Ecole Polytechnique Fédérale de Lausanne, Switzerland

#### OTHER MEMBERS

Prof. Luca Maria Gambardella, IDSIA Lugano, Switzerland

Prof. Gautier Stauffer, University of Bordeaux, France

Prof. Richard Hartl, University of Vienna, Austria

Prof. Ana Viana, INESC Porto/Polytechnic Institute of Porto (School of Engineering), Portugal

### SUBMISSION

Please submit the material online on

<http://transp-or.epfl.ch/eeпа2012/registration.php> before January 31, 2012.





# EURO Gold Medal 2012 CALL FOR NOMINATIONS

The EURO Gold Medal is the highest distinction within OR in Europe. It is conferred on a prominent person for an outstanding contribution to Operational Research. The award will be officially bestowed at the opening plenary session of the EURO XXV Conference in Vilnius, if there is a suitable candidate.

The EURO Gold Medal is awarded for a body of work in operational research preferably published over a period of several years. Although recent work is not excluded, care should be taken to allow the contribution to stand the test of time. The potential prize recipient should have a recognized stature in the European OR community. Significance, innovation, depth, and scientific excellence should be stressed.

To emphasize the European flavour of the Award, all societies are strongly urged not to propose a candidate from their own country. No currently active officer of EURO (Executive Committee member, EURO Gold Medal jury member, Organising and Program Committee Chairperson of the EURO XXV Conference) is eligible.


Nominations for the 2012 EURO Gold Medal can come from EURO

member national societies, the previous EURO Gold Medal laureates and jury chairs.

Nominations should be sent to:

**Aharon Ben-Tal**  
**Faculty of Industrial Engineering & Management**  
**Technion-Israel Institute of Technology**  
**Technion City, Haifa, 32000**  
**Israel**  
**abental@ie.technion.ac.il**


Nominations, including a detailed CV of the nominee and a written justification for the nomination should be sent before 31st March, 2012.

The Jury of the EURO Gold Medal 2012 is composed of: Aharon Ben-Tal (Israel)- chairman; Ruediger Schultz (Germany); Ger Koole (The Netherlands); Catherine Roucairol (France) and Jeff Griffith (UK). 

## 2012 UPS George D. Smith Prize Call for Applications




Submit your application now for this new INFORMS prize that rewards an academic department or program for effective and innovative preparation of students to be good practitioners of OR/MS or analytics, defined broadly. The deadline for applications is October 31, 2011. Watch the announcement from the 2011 Edelman Gala.

For more information contact the prize chair, Robert D. Smith at [dsmith@monmouth.edu](mailto:dsmith@monmouth.edu). 

## Submit Your Entry Now for the 2012 Edelman Award



Please submit your entry for the INFORMS top prize for implemented work in OR/MS and analytics. A three page summary is due to the chair by October 19, 2011. Watch the announcement of the winner at the 2011 Edelman Gala.

For more information, contact the prize chair, Stephen Graves at [sgraves@mit.edu](mailto:sgraves@mit.edu). 

## Featured Member

### EstORS – Estonian Operational Research Society

Otu Vaarmann <[vaarmann@cs.ioc.ee](mailto:vaarmann@cs.ioc.ee)> and Peep Miidla

The *Estonian Operational Research Society* (EstORS for short and *Eesti Operatsioonilise Selts* in Estonian) was founded by Dr. Toomas Meressoo of the Estonian Scientific Foundation (ESF) and Prof. Otu Vaarmann of the Institute of Cybernetics at Tallinn University of Technology (TUT) on the 18th March 2010.

The General Assembly meeting held on April 6 of the same year was attended by 22 participants from different Estonian universities and research institutes. This Assembly elected seven officers to its Management Board: Otu Vaarmann as President (Chairman of the Management Board), Assoc. Prof. Peep Miidla from University of Tartu (UT) as Vice President and IFORS Representative, Mrs. Marje Tamm (Institute of Cybernetics at TUT) as Secretary, Dr. Harald Kitzmann (TUT) as Treasurer and Prof. Jaan Janno (TUT), Prof. Jaan Lellep (UT), Dr. Toomas Meressoo (ESF) as members. Dr. Tiit Riismaa (Institute of Cybernetics at TUT) was elected as Auditor of the Society.

**Its being one of the  
smallest members  
of the European  
Union (with 1.34  
million inhabitants)  
did not get in the  
way of having this  
association of  
active and enthusi-  
astic OR profes-  
sionals recognized  
by the international  
OR community.**

The newly formed society immediately decided to join the IFORS international community and this culminated in the filing of its application for membership on June 22. It was in March 2011 that the Estonian Operational Research Society was accepted as the 52nd national member society of IFORS. Its being one of the smallest members of the European Union (with 1.34 million inhabitants) did not get in the way of having this association of active and enthusiastic OR professionals recognized by the international OR community.

EstORS (<http://www.ioc.ee/matem/estors/>) is a sovereign voluntary non-profit organization located in Estonian Republic, Tallinn>>



>> EstORS is ruled and regulated by its Statutes in accordance with the Constitution of the Estonian Republic as well as pertinent Estonian Laws and Regulations. The Society unites the experts in the field of Operational Research/Industrial Mathematics and its applications and is actively working for development of the Estonian Republic as an information society. EstORS aims at contributing to the progress of scientific and technical knowledge, integrating competence Engineering Science and Management Science/Operations Research, creating and transferring scientific knowledge in Informatics and Decision Systems.



Otu Vaarmann

Main purposes of the Society are:

- To encourage theoretical and applied researchers in the field of Operational Research (OR) to contribute to the creation of new knowledge in Informatics and Decision Making (DM) from the viewpoint of Science, Technology and Innovation.
- To participate with other institutions in elaborating development policies for disciplines within the scope of the Society.
- To promote the establishment of international contacts and stimulate further advancement of academic links and free exchange of experience between its members and members of other similar scientific societies within the the country, the region and the world.
- To organize national and international meetings (conferences, seminars,


exhibitions etc) related to the subjects, scope and objectives of the Society.

- To disseminate scientific and academic contributions as well as achievements of the Society and its members by means of lectures and publication of books and papers.
- To encourage the teaching of Operational Research and to this end, raise funds and create courses for raising the level of the skills in the field of OR/DM.



Peep Miidla

The Society plans to introduce a new Master Curriculum on Industrial Mathematics in accordance with ECMI (European Consortium For Mathematics in Industry) corresponding to Model Curriculum. Through the cooperative effort of mathematicians, engineers and experts of science, the Society also aims to develop educational materials that link mathematical topics with applications in engineering, management and science which will be suitable for further education and self study for students.

Further, the Society concerns itself with mathematical education and broader relationship between mathematics and society even as the practical scope and utility of optimization continues to grow. Currently, specialization in OR can only be found at Tallinn University of Technology and University of Tartu. The Society plans to embark on projects to improve the attitude towards mathematics which it hopes, will result in more widespread use of Operations Research. 

## Featured Member

# Statistics and Operations Research: Together in Spain

**María del Carmen Pardo Llorente** <mcapardo@mat.ucm.es>, SEIO General Secretary

The union of Statistics and Operations Research is flourishing well in Spain. In fact, the Spanish Society of Statistics and Operations Research (SEIO) created in February 12, 1962 celebrates its golden anniversary next year.

## The union of statistics and operations research is flourishing well in Spain.

Founded as the Operational Research Society, the organization expanded in June 30, 1976 to include Statistics and Computer Sciences. The continuing proliferation of societies in Computer Science prompted a decision in December 20, 1984 to concentrate society activities on Statistics and Operations Research. The Society changed its name accordingly though it retained its acronym.

The purpose of SEIO is to develop, foster and disseminate knowledge of statistical and operations research methodology and practice. In pursuing its mission, SEIO promotes meetings and workshops, publishes scientific and research journals, encourages national and international scientific communications, promotes links between the academe and industry, and promotes and encourages applications that benefit the broader community and society.


### Organization

The Society's 700 members are organized into the Statistics and Operations Research sections, managed by an Executive Committee, a General Secretary responsible for administration, an Academic Committee and two section Vice Presidents. Currently, SEIO research groups include Game Theory, Location Theory, Multicriteria Decision Theory, Functional Data Analysis, Classification and Multivariate Analysis and Teaching and Learning of Statistics and Operation Research.

### Links with other organizations

SEIO has institutional members, including the Spanish Statistical Office "Instituto Nacional de Estadística - INE", which occupies a permanent position in the Executive Committee. SEIO is a member of ISI (International Statistical Institute), IFORS (International Federation of Operational Research Societies), EURO (The Association of European Operational Research Societies), CEMAT (Spanish Committee of Mathematics), EMS (European Mathematical Society), ALIO (Association of Latin-Iberoamerican Operations Research Societies) and CIMPA (International Centre for Pure and Applied Mathematics). It is interesting to note that SEIO is the only IFORS member society that is a member of two regional groupings, namely, EURO and ALIO.



 Presidents Ignacio García-Jurado (2007-2010) (Left) and José Miguel Angulo.(2010-2013) (Right) on the occasion of the XXXII SEIO Conference in A Coruña last September 2010.





## Publications

SEIO publishes three journals and a quarterly electronic bulletin. TEST, an international journal of statistics and probability issued three times a year, puts emphasis on papers offering original theoretical contributions with demonstrated or potential value for applications. Thus, methodological content is crucial for publication in the journal as is a detailed coverage of practical implications. In addition to the regular contributions, each issue features an invited paper covering a current and challenging topic authored by an internationally recognized statistician. Founded by Prof. Sixto Ríos, the journal was known as Trabajos de Estadística from 1950 to 1991. The former editors were José M. Bernardo (1992-1996), Antonio Cuevas and Wenceslao González-Manteiga (1997-2001), Enrique Castillo and Juan Antonio Cuesta (2002-2004), María Ángeles Gil and Leandro Pardo (2005-2008). Since January 2009, new editors are Ricardo Cao and Domingo Morales. It is indexed in Journal Citation Reports/Science Edition in the category "Statistics and Probability" with a 2010 Impact factor: 1.036 (ranked 45 out of 110).

TOP is the TEST counterpart for operations research, and publishes original findings in OR/MS. Contributions that investigate either mathematical issues or applications to real-world decision-making problems appear in its semi-annual issues. Among the topics covered are game theory, location, routing, queuing and stochastic models, supply chain management, combinatorial optimization, convex optimization, multiple-criteria decision analysis, and global optimization. In addition to original research papers, review articles covering emerging areas are included. The journal was founded as Trabajos de Investigación Operativa, by Sixto Ríos and was published between 1950 and 1992. The former editors were Jaume Barceló and Laureano F. Escudero (1993-2000), Ignacio García-Jurado and Marco A. López-Cerdá (2001-2006). Emilio Carrizosa and Justo Puerto have assumed editorship since January 2007. It is


indexed in Journal Citation Reports/Science Edition in the category "Operations Research & Management Science" with a 2010 Impact factor: 0.756 (placed 49 of 74).

BEIO publishes articles of general interest in the fields of statistics and operations research. It is accessible in digital format through the society website. The journal is indexed by MathScinet, Zentralblatt MATH, Biblioteca Digital Española de Matemáticas, Dialnet (Documat), Current Index to Statistics, The Electronic Library of Mathematics (ELiBM), Scirus, COMPLUDOC and Cisne Complutense Catalog. The former editors were José M. Bernardo (1985-1987), Javier Yáñez (1988-1993), Francisco Javier Quintana (1994-2004) and Jesús López Fidalgo (2005-2008). María del Carmen Pardo became editor in October 2008.

INFOSEIO is the quarterly electronic bulletin, which includes information on meetings, scientific events, summaries of PhD theses, software and bibliographic information, as well as other details that the general membership might find useful. The editor is Mar'a Teresa Santos.

## Conferences

Every year and a half, SEIO brings together an average of 400 participants to its conferences. These conferences feature the annual general meeting and since 1984 has awarded "Premio Ramiro Melendreras" to the best research work presented by a young statistician or operations researcher. The award was established to honor the memory of full professor Ramiro Melendreras. The XXXIII SEIO Conference will take place in Madrid in Spring of 2012. At present, SEIO is busy preparing to host the IFORS 2014 conference to be held in Barcelona.

Click <http://www.seio.es/> to learn more about SEIO activities, statistics and operations research news, membership forms, and links of interest. For additional details, contact the Secretary ([oficina@seio.es](mailto:oficina@seio.es)). 



Barcelona July 2014

Organize a session, give a talk and  
experience this great city!

## Barcelona ...

- ... displays the characteristics of major Mediterranean cities.
- ... is dynamic, open, and inviting.
- ... is a compact city with beautiful architecture, great cuisine, beaches and more...
- has over 2000 years of history: explore the excavated Roman wall, admire the architecture of Gaudí, the art of Miró, and the outdoor sculpture throughout the city.
- is a cultural center with Opera, Ballet, Concert, Theaters, festivals, expositions, museums and more.
- is the only large city in Europe that boasts 5 kilometres of beaches in the city itself.
- is child-friendly, with parks, fairs and museums.
- Traveling to Barcelona is easy with its international airport located only 15 minutes from the city.

Learn, enjoy, and be part of the great  
IFORS community

See you in Barcelona!

*Elena Fernández*

General Chair:  
Elena Fernández  
[e.fernandez@upc.edu](mailto:e.fernandez@upc.edu)

*Stefan Nickel*

Program Chair:  
Stefan Nickel  
[stefan.nickel@kit.edu](mailto:stefan.nickel@kit.edu)

## Feature

# CSIRO Research Into Wine Supply Networks

Leorey Marquez <[Leorey.Marquez@csiro.au](mailto:Leorey.Marquez@csiro.au)> and Simon Dunstall <[Simon.Dunstall@csiro.au](mailto:Simon.Dunstall@csiro.au)>  
CSIRO Mathematics, Informatics and Statistics (CMIS)

## Introduction

CSIRO is applying cutting-edge mathematics to all aspects of wine supply networks to improve efficiency and help winemakers deliver higher quality wines to consumers.

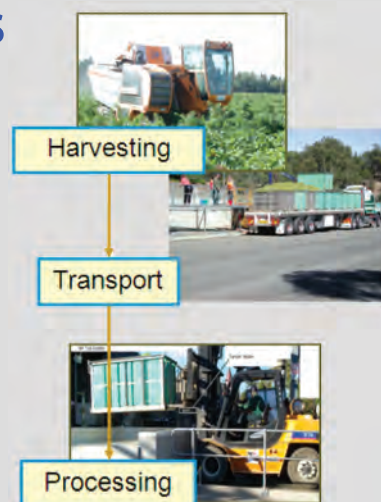
CSIRO aims to revolutionise the way in which winery intake – the movement of grapes, juice and wine into the winemaking processes of a winery – is planned and managed. The underlying maths includes algorithms for resource optimisation and negotiated scheduling, which can be applied to supply networks in many industries.

Some of the critical considerations in winery intake are:

1. Ripened grapes must be harvested as close as possible to the ideal time,
2. Harvested grapes must be transported to a winery before significant berry deterioration occurs,
3. Flows of unfermented juice and incomplete wine between wineries

need to be integrated with grape logistics and other winemaking considerations.

CSIRO and major Australian wine producer, the Orlando Wyndham Group (OWG), have co-invested in a partnership to develop a system for simultaneously planning harvesting and grape intake into wineries. Their critical goals are to maximise value-realisation from grape assets and maximize revenue from capital assets such as harvesters, trucks and winery equipment. Achieving these goals requires that the actions of each stakeholder are coordinated, that activities occur at optimal times, and that plans are adaptable to unforeseen changes. >>



>> CSIRO's research aims to coordinate the activities of each stakeholder in the supply network and achieve 'decision harmony' among them. This will enable winery intake activities to proceed in the best way.

The research team on wine supply networks is led by Dr. Simon Dunstall and Dr. Leorey Marquez. There are six areas of research:

1. Vintage projection
2. Maturation forecasting
3. Anomaly detection
4. Harvest logistics
5. Global monitoring of wine shipments
6. Bulk wine transport

#### Vintage projection

Before vintage begins, and during the early stages of vintage, grape sugar samples tend to be available for a few blocks only. At this time, a view of vintage can only be formed using historical data and the viticulturist's expectations of the vintage to come. The general process of forming a view of vintage (with little or no current vintage data) can be referred to as vintage projection.

CSIRO has developed a vintage projection tool that allows winemakers to establish a whole-of-vintage plan for achieving greater control of the network and minimising the risks associated with winemaking. The projection tool provides the viticulturist crucial information for obtaining a forward view of the vintage, determining when to start harvest campaigns, assessing the redeployment of resources and contracting winery supply and capacity. With the planning tool, the viticulturist can take an entire vintage in advance, create a view of the next vintage based on similarities with previous years, then use long-range weather predictions to assess various scenarios about the coming vintage.

The tool works at the individual block level (specific blocks of grape varieties being grown) and allows the viticulturist to track the status of each block from every winery from week-to-week. The model uses the data for weather, results of grape sampling and historical data to infer expected dates of harvests for all blocks. The output is a high-quality vintage plan that leads to better grape intake performance while using less operating costs.

The enhanced vintage projection model has been implemented in software (known as VPROJ) and used in-house by CSIRO to generate harvest dates.

#### Maturation forecasting

To make good wine you need high quality grapes. Harvesting as close as possible to the optimal date is crucial for determining the quality of the grape. As grapes mature their sugar (or Brix) content increases, so grape growers need to harvest grapes at the best time to get just the right amount of sugariness. However it is difficult to accurately predict when grapes will be ripe because it changes from one season to the next and depends on highly variable factors such as weather, moisture content of the soil, humidity and others.

Some maturation trends are repeated seasonally. For example we know that grapes mature

more slowly in late autumn because there is less sun. However other factors affecting maturation such as weather are highly variable and tend to differ from one season to the next. This means that last season's maturity data is often not a good predictor for this season's maturity data.

CSIRO mathematicians have developed a grape maturation model to help growers predict when grapes will be ready for harvest. The CSIRO maturation forecasting model integrates factors that repeat seasonally with various independent factors to produce the forecasts. The latest version of the model has incorporated specific weather forecasts for different block locations resulting in more accurate predictions than the previous version which only used average weather characteristics.

The maturation prediction for each block depends on the results of regular sampling of the Brix content of the growing grapes. Brix content is measured by sampling blocks once or twice a week. The model focuses on the rate of change in Brix level, not the absolute Brix content. The forecasting model uses a Kalman Filtering technique to estimate the average change in Brix per day as a function of measurable factors such as:

1. Starting Brix content
2. Day of year
3. Maximum temperature
4. Rainfall

The model produces a projected optimal date of harvest for each block which the winemaker can use in planning the logistics of harvesting. The projected date is usually accurate to  $\pm 1$  day of the true date for projections made 1 or 2 weeks in advance. This maturation forecasting functionality is implemented in a software application/service known as MATPRED, and this software has become part of Pernot-Ricard Pacific's enterprise information systems.

#### Anomaly detection

In January and February 2009, a severe heatwave affected much of the south-eastern region of Australia causing heat stress-related damage to many vineyards. On the 7th February catastrophic bushfires affected some of the wine grape growing regions that were also affected by the heatwave with smoke from bushfires adding to the damage produced by heat. There were tragic results for many Victorian towns such as Marysville and Kinglake where the bushfires resulted in numerous human casualties.

There are also serious impacts on wine quality associated with climate change. Modelling reported by Webb et al (2008) found that:

1. The impact of global warming was found to be negative overall, assuming no adaptation is implemented, for all Australian wine growing

regions.

2. It is found that the reduction to wine grape quality varied regionally, with greater quality reductions calculated for the inland regions.
3. Without adaptation, wine grape quality may be reduced at a national scale in Australia from 7% with lower warming to 39% with higher future warming by the year 2030.
4. And from 9% with lower warming to 76% with higher warming by the year 2050 (all uncertainties considered).

CSIRO has extended its maturation forecasting model to deal with temperature stress from extreme heat produced by anomalies in weather. This development was motivated by the observation that many blocks of grapes were adversely affected by very high temperatures during the 2009 season. The mathematical form of the temperature stress term was developed in conjunction with Angus Davidson of Pernot-Ricard Pacific.

The procedure for estimating temperature stress is as follows:

1. Estimate the amount of sunshine. This approximation to the amount of sunshine per day impacting on a horizontal surface will be used as an explanatory variable to the rate of change of Brix. Include latitude of location as explanatory variable (if data is available).
2. Establish temperature thresholds
3. Obtain cumulative daily heat stress for period. This should be zero for most days in the year
4. Incorporate sunshine, heat stress terms in the linear model
5. Obtain model of best fit

For example, table 1.1 gives the average estimated size of the non-zero heat stress effects for the different vintage years. Figures calculated for 2009 show there were much larger number of non-zero heat stress effects than for other vintages, and these effects were generally larger in magnitude.

Table 1.1

Vintage	2003	2004	2005	2006	2007	2008	2009
Number of intervals affected by heat stress	926	864	118	1098	724	481	5500
Average size of heat stress effects	0.0066	0.0282	0.0036	0.0510	0.0042	0.0024	0.1144

#### Harvest Logistics

Grapes are a highly perishable product, so timing is crucial. Also, grape processing equipment is expensive and requires careful scheduling to maximise its use and efficiency. Knowing when grapes are likely to be ready to harvest not only improves the quality of the wine they produce, but also helps with scheduling and planning for the rest of the supply chain. Harvest logistics must be planned about a week in advance in order to schedule harvesters and transport.

Many issues need to be addressed in order to harvest grapes efficiently:

1. Harvesting may only be possible in certain conditions (time of day, temperature, weather).
2. Quality loss occurs if grapes are not processed soon after harvest (6 hours for red, 2 hours for white). >>





- >> 3. Crushing and pressing need to be performed only a few hours after harvest
- 4. There are usually a limited capacity of crushers and presses
- 5. Time needs to be allocated to clean crusher and presses between incompatible grapes
- 6. Juice of blocks belonging to the same winespec should be stored together in the same tank.
- 7. Tanks can only be open for a fixed amount of time.
- 8. Tanks must have minimum fill (ullage) if not empty
- 9. There are only a limited set of tanks

CSIRO's model allows customers to predict numbers of grape blocks that will be ready for harvest and therefore make much better decisions about harvesting and cartage. The model provides support to winemakers in making the following decisions:

- 1. When to harvest which block
- 2. When to crush each block (pressing must come directly afterwards)
- 3. When to clean the crushers and presses
- 4. Which tanks to assign to which winespecs
- 5. Which block goes into which tank
- 6. When to open and close tanks

#### Wine Logistics Tool

CSIRO has announced the availability of version 3 of its integrated vintage planning software ASN Wine Logistics Client. This version combines the latest updates to the maturation forecasting software, the vintage projection software and the anomaly detection software. This software has applicability in Australia and New Zealand but is being expanded for use in any of the world's wine growing regions. CSIRO is inviting wineries to trial the Wine Logistics Client software at little or no cost.

#### Global tracking of wine shipments

CSIRO is part of an international, long-term project to track temperature variability in international wine shipments. This project aims to create a global, detailed picture of containerised wine shipments to answer questions about what temperature extremes wine is



exposed to, how temperature variation depends on use of different insulation types and which parts of the supply chain contain the greatest risks. The project can then offer strategies to wine exporters for minimising temperature variation. By providing information about the levels and fluctuation of temperature during shipment, CSIRO is helping wine producers and transporters better understand

supply chain conditions and therefore ensure that the wine quality that consumers receive is the same quality that left the winery.

This international collaboration is managed by the Wine Supply Chain Council (<http://wscc.scl.gatech.edu>) and includes:

- 1. The Supply Chain and Logistics Institute, Georgia Institute of Technology, USA
- 2. The Council for Scientific and Industrial Research (CSIR), South Africa
- 3. The University of Cuyo, Argentina
- 4. The University of Bologna, Italy
- 5. The Catholic University of Chile, and
- 6. CSIRO, Australia.

For this project, CSIRO is working with Australian wine companies to insert small sensors (temperature loggers) in wine shipments bound for international markets. The sensors measure time and temperature during the journey from Australian wineries to international distributors.



High and low temperatures experienced during the land transport, port handling and sea transport parts of a journey will all affect the wine quality. When the wine shipments arrive at their destination, the sensors are retrieved and the temperature data downloaded. CSIRO then analyses this data to build information on the route taken by the wine to work out where, when and why the wine was under temperature stress. By tracking hundreds of cartons from all over the world, CSIRO and its partners are building up a detailed picture of wine supply chains around the world. To date, the WSCC reports that:

- 1. 600 data-loggers have been recovered containing over 280,000 temperature records for shipments from 5 different wine-producing regions --- Argentina, Australia, Chile, South Africa, and California --- to more than 39 different states of the US.
- 2. Around 50% of all shipments of wine have been exposed to temperatures of at least 86 °F (30 °C) during transportation. The extreme temperatures recorded were a high of 147 °F (64 °C) and a low of 16 °F (-9 °C).
- 3. Two different panels of wine experts did not perceive the differences when blind-tasted with pairs of bottles of the same wine where one has been exposed to shipping temperatures and the other was not.

#### Bulk Wine Transport

CSIRO is studying the transport management processes, systems and decision-making as well as equipment compatibility, regulations

and resource shortages in the transport of juice and wine in bulk between storage and processing facilities in the food and beverage production supply chain.

CSIRO is collaborating with industry partners such as Sinclair-Knight-Merz, the Winemakers Federation of Australia, tanker transport operators and wine producers to identify innovation opportunities in bulk wine transport within the Australian wine industry.

There is significant alignment in the objectives of wine producers and transport operators. Inefficiencies in the bulk wine transport system impact financially and operationally on both groups of supply chain participants. The inefficiencies also directly give rise to excess greenhouse gas (GHG) emissions. This is an industry-wide concern, in part due to the potential for high carbon footprints to drive negative sentiment amongst governments, businesses and/or consumers in Australia's key overseas markets.


The most important outcomes of transport innovation sought by wine producers were optimal transport operational performance (i.e. transport service at the right time, product, place and condition) and carbon-footprint reduction. For transport operators, increasing net revenue and capital utilisation, better labour management and driver retention, and emissions reduction were stated as the important innovation aims.

CSIRO has identified many areas for improvement that can be addressed by innovation, and have grouped these into seven categories: transport efficiency; transport performance; equipment and regulation; wine producers' performance; collaboration and joint effort; demand management and labour management.

CSIRO lists the following as important targets for innovation activity:

- 1. Equipment: compatibility in fittings and rates between tanker and winery equipment;
- 2. Tanker delays at wineries: reducing the incidence and severity;
- 3. Opportunities for demand management: how to strike a balance between the requirements for transport derived from winemaking considerations, and the requirement for transport efficiency and emissions reduction;
- 4. Coordination between wineries and transport operators: systematic approaches to planning and monitoring that promote efficiencies and balancing winemaking and transport considerations.

Finally, CSIRO sees a particular need for financial innovations to keep pace with technical innovations. The benefits of efficiencies will need to be shared in a way that draws all participants into the innovation process and delivers real business advantages to them, independent of their size and the roles they play in the industry.

(Reference: L. B. Webb, P. H. Whetton and E. W. R. Barlow (2008) "Climate change and winegrape quality in Australia", CLIMATE RESEARCH, Vol. 36: 99–111.) 



# Natural Disaster Mitigation Policy in Japan and Role of OR

Tatsuo OYAMA <oyamat@grips.ac.jp> National Graduate Institute for Policy Studies

Natural disasters such as earthquakes, typhoons, heavy rains will surely hit the Japanese islands again in the future. As such, policy for natural disaster mitigation becomes very important for Japan

On March 11, 2011 at around 2:45 pm, Japan experienced an earthquake of magnitude no less than 9.0 on the Richter scale, bringing with it a tsunami that reached 15 meters high. This Great East Japan Earthquake hit the northern part of Japan, causing more than 20,000 casualties: 15,000 dead and more than 5,000 missing by the end of August 2011. As if this was not enough, the worst part surfaced later, with the Fukushima nuclear power plant meltdown of nuclear reactors and fuel rods, the effects of which call for long-term solutions.

As has happened in the past, natural disasters such as earthquakes, typhoons, heavy rains will surely hit the Japanese islands again in the

future. As such, policy for natural disaster mitigation becomes very important for Japan. In particular, earthquakes are extremely hard to predict, which makes preparation for them indispensable. The theory, methodology and techniques of operations research (OR) have a very important role to play in coming up with natural disaster mitigation policy.

Japan is particularly prone to weather-related disasters. Throughout its history, Japan has experienced extensive devastation caused by a multitude of disasters, both geophysical such as earthquakes, tsunamis, landslides, volcanic eruptions, and hydro meteorological such as typhoons, rainstorms, heavy snow, drought, strong winds, and heat waves. The term "natural disasters" encompasses natural hazards such as earthquakes, tsunamis, volcanic eruptions, heavy rains, floods, landslides, and snow avalanches and does not differentiate between geophysical and hydro meteorological disasters. Japan has a long history of natural disasters. Various government agencies, non-governmental organizations and academic institutions usually document lessons from each of them. Analyzing historical data can help identify the main vulnerabilities and priority areas in relation to natural disasters.

Figure 2 presents the share of the number of natural disasters in Japan during the whole period from 1945 to 2005. As shown in this figure, the total number of natural disasters listed by the Japan Meteorological Agency is 331. Out of these 331 natural disasters, typhoons have the highest share at 36% followed by heavy rains at 22%. Both earthquakes and other types of disasters have a 21% share each. Some examples of disasters falling under the category "other" include heavy snow, strong wind, tsunami, volcanic turbulence, landslides, etc.

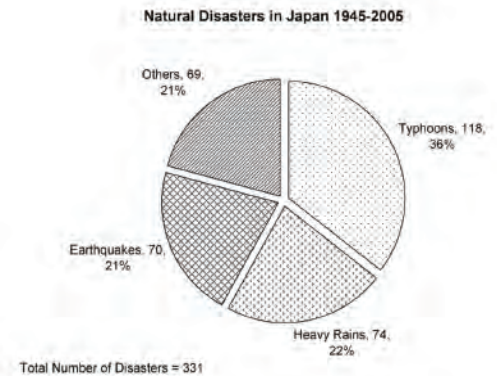


Figure 2 Shares of Natural Disasters in Japan 1945 – 2005

Dividing the whole period from 1945 to 2005 into three 20-year periods, 1945–1964, 1965–1984 and 1985–2005, the number of dead and missing (again, from hereon referred to as "casualties") due to natural disasters for each period is given in Figure 3. As shown in the figure, the total number of casualties from 1945 to 2005 is 48,187. The bulk (more than 70%) of this number comes from the first period. The decrease in the number of casualties from the first to the second period is significant, with the difference at 84%. However, from the second to the third period, this number increased by around 3,000 owing to the Great Hanshin-Awaji earthquake. The maximum number of casualties for the period 1945 to 2005 is 6,436, again attributed to the Great Hanshin-Awaji Earthquake, making it the second worst disaster in Japan's post-war history. As for the average number of disasters, the first period on average has around 350 casualties for each disaster, compared to approximately 55 casualties per disaster in the third period.

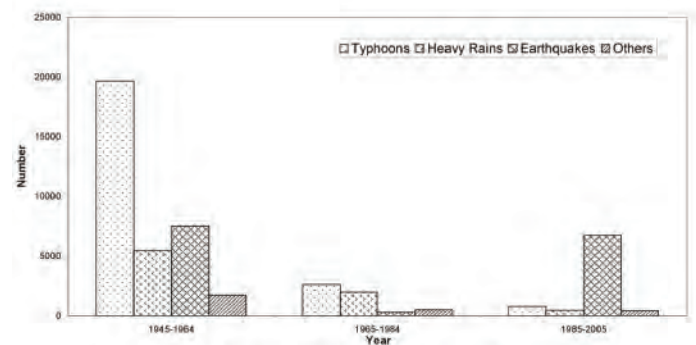


Figure 3. Number of Deaths and Lost due to Natural Disasters by 20-year Time Period

The above analysis shows the potential for the use of data currently available. In the area of natural disaster mitigation there are many issues, topics, and problems that must be considered, investigated and solved by operations researchers. OR theory, methodology and techniques are applicable to the following issues:

1. Natural disaster mitigation: data analysis for past occurrences and damage, forecasting, preventive countermeasures, international comparison, evacuation routes, shelter location, relief goods distribution, logistics, donation goods and public funds allocation, case studies for specific earthquakes, floods, hurricanes and landslides.
2. Risk management: emergency management, terrorism management, lifeline system robustness (traffic road, transportation, water supply, electricity, gas, medical care), risk management policy analysis: policy plan, policy, implementation, policy evaluation. >>

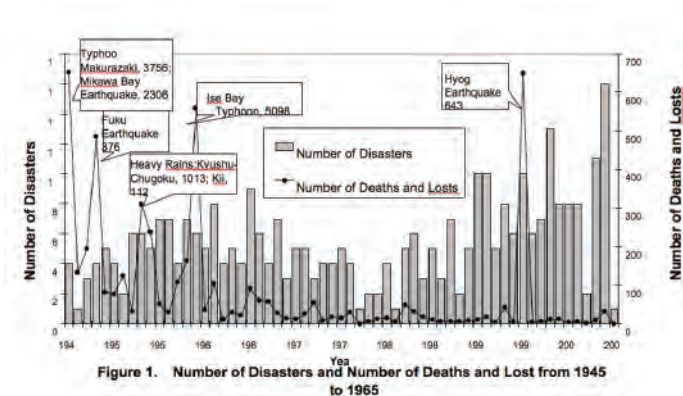



Figure 1 plots the number of those dead and missing (from hereon referred to as "casualties") against the number of disasters for each year from 1945 to 2005. It is interesting to note that the highest number of casualties of 7,515 occurred in 1945, which recorded only four natural disasters, namely, two earthquakes and two typhoons. The destructive Mikawa Bay earthquake brought about 2,306 casualties and Typhoon Makurazaki had 3,756. Typhoons were clearly destructive in the early period. In 1959 the Ise Bay Typhoon became the most destructive typhoon in terms of fatalities and missing persons, recorded at 5,098. Heavy rains in 1953 with typhoons in Kyushu-Shikoku and Kii caused more than 2,000 casualties. Moving on to earthquakes, the Fuku earthquake of 1948 claimed 3,769 casualties, a number that almost doubled to 6,436 when the 1995 Great Hanshin-Awaji earthquake hit Kobe.





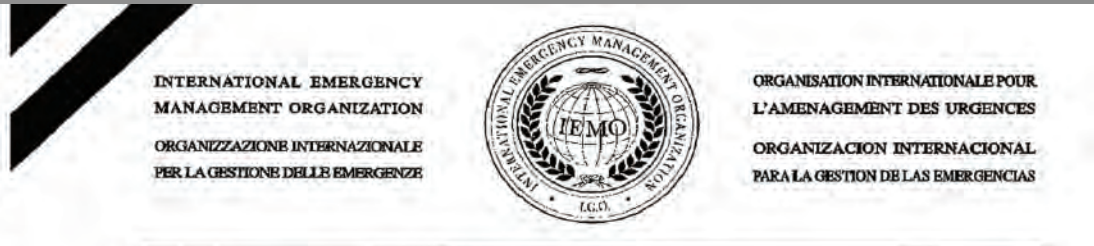
>> Natural disaster mitigation issues have been or are going to be discussed in many OR-related conferences. In the end of July this year, the Japan-China Joint Workshop on Accident Prevention and Disaster Mitigation Policy was held at the National Graduate Institute for Policy Studies. In mid-September, the Operations Research Society of Japan is holding a special session entitled "Recovery and Restoration from the Great East Japan Earthquake" in conjunction with its annual OR conference in Kobe. Innovative presentations and fruitful discussions are expected from this session.

Nonetheless, this very important topic must be explored not only by OR researches in Japan, but also by those in the region, and in the world. OR workers have a lot to contribute to the urgent problem of developing, implementing and evaluating natural disaster mitigation policy. 

## Call to Action

IFORS is in receipt of the letter reproduced below from the INTERNATIONAL EMERGENCY MANAGEMENT ORGANIZATION (IEMO), which was established in April 2006 in the context of the international efforts subsequent to the Tsunami catastrophe (2004 /2005). It is now fully operational as an Intergovernmental Organization, composed by a governing Council and a Secretariat. Other details may be found at its website, <http://www.iemo.int>.

We invite your opinions on IFORS involvement in this matter. Please send your comments to [news@ifors.org](mailto:news@ifors.org).



**To: Relevant National and Regional  
Technical Cooperation and Research Organizations**

**21.08.2011**

**Dear Colleagues,**

After the devastating effects of both natural and man-made emergencies, which are seriously expanding today, the urgency and the necessity to contribute to *emergency prevention* has become an essential topic for the international community. The IEMO (International Emergency Management Organization) has decided to respond to the relevant General Assembly Resolutions on emergency reduction, by launching the GPN (Global Prevention Network), as comprehensive initiative to gather different national, regional and international academic and research centers, public institutions, NGOS as well as the civil society and the private sector, to commonly mobilize additional resources to prevent the occurrence or the effects of emergencies and relief to the relevant populations.

The GPN will share ideas, points of view, skills, expertises and suggestion on how to prevent emergencies and how to adequately respond to their ravage. The participation to the Network is free of charge, by compiling the attached form and sending back to the IEMO Secretariat by e-mail or fax.

IEMO (International Emergency Management Organization) [www.iemo.int](http://www.iemo.int), is an intergovernmental organization with the goal to work for emergency prevention preparedness, mitigation and recovery, established 14 April 2006 through International Convention and settled by regulatory Statutes in Additional protocol thereto, duly registered with the Secretariat of the United Nations, according to Article 102 of the UN Charter, (registration N. 53907 of 2 June 2006), duly published on the Volume 2371 of the United Nations Treaty Series (UNTS) and on the Statement of Treaties and International Agreements registered or filed and recorded with the Secretariat of the United Nations N. ST/LEG/SER.A/712, as well as Full Participant of the United Nations Global Compact (UNGC- with Registration N. 11929 of 22 June 2010) as described in annexed memorandum on the organizational activity (UN General Assembly Document A/66/142), hereby attached as example.

The participation to the GPN Network also entitles to participate to the IEMO services and activities as the Laissez-Passer /Safe-Conduct Program, deemed to protect humanitarian workers in assistance operations, by providing them with an Official Document to enhance their safety on the field and extensively described on [www.iemo.int](http://www.iemo.int) website in the section: Safe-Conduct.

Please join hands in this common initiative for reducing emergencies and may you agree the expression of our most distinguished regards

Dr. Alessandro Manini  
IEMO President



IEMO Council  
Via Barberini 3/a  
00187 Roma (I)

tel +39032130340  
fax +390696708588  
[www.iemo.int](http://www.iemo.int) [iemo@iemo.int](mailto:iemo@iemo.int)

IEMO Secretariat  
via Bonomelli 1  
28100 Novara (I)





## Improving Living Conditions in Rural Anatolia: OR Meets Archaeology, Architecture and Engineering

**Geoffrey Summers** <summers@metu.edu.tr>, Department of Settlement Archaeology, Middle East Technical University, Ankara, Turkey  
**Françoise Summers** <fsummers@metu.edu.tr>, Department of Architecture, Middle East Technical University, Ankara, Turkey  
**Soofia Tahira Elias-Ozkan** <elias\_ozkan@yahoo.com>, Department of Architecture, Middle East Technical University, Ankara, Turkey  
**Gerhard-Wilhelm Weber** <gweber@metu.edu.tr>, Institute of Applied Mathematics, Middle East Technical University, Ankara, Turkey

This is an account of how an interdisciplinary approach aimed at scientific archaeological discovery brought about a project aimed at the improvement of living conditions for the rural folk of Anatolia.

In 1993 the Kerkenes Mountain Project by Geoffrey Summers, Françoise Summers and their colleagues was inaugurated to study the Iron Age capital that had once stood on the Kerkenes Dağ, overshadowing the village of Şahmuratlı. Clearance of the Cappadocian Gate in 1999 revealed that the defences were built entirely of stone with wooden parapets on the towers and buttresses. Current indications are that the foundation of the city predated the peace treaty between the Medes and the Lydians and that the foundation date of the archaeological site maybe around 600 B.C. Albeit its major archaeological importance, the project emphasized from the start that any impact - social, cultural or economic - should be for the benefit of the village and the region.

Initiated in 2002 with the help of the Australian Embassy Direct Aid Program, the Kerkenes Eco-Center Project was established to promote sustainability through environmental studies. More specifically, its objectives were to:

- Advocate the use of renewable sources of energy;
- Act as a stimulus and a catalyst for environment-friendly building with appropriate materials and energy efficient designs;
- Act as a dynamic experimental base for testing designs, materials and activities suitable for viable and sustainable village life; and
- Encourage village development and income generating activities that might halt, if not reverse migration from rural areas to the cities.

Apart from seeing the completion of its first strawbale building and the Erdoğan Akdağ Center for Research and Education, the Kerkenes Eco-Center Team in collaboration with ŞAH-DER (The Şahmuratlı Village and Kerkenes Association for Public Relations, Prosperity, Help and Support) conducted a very successful program for the promotion of solar energy, a drip irrigation scheme for organic gardens even as it pursued other programs such as solid waste separation for composting and recycling, reuse of grey-water and promotion of appropriate materials and design for energy efficient buildings.

The Britain-Turkey Partnerships Programme between the METU Department of Architecture and the Environment and Energy Studies Programme of the Architectural Association, London undertook studies on the environmental performance of the building. The British Embassy focused on improving political commitment to a low-carbon high-growth economy by mobilising support at local levels with a view to eventually convincing the government to develop new policies at the national level. The Eco-centre helped bring together local officials, businessmen, MPs and villagers to stimulate more formal work at the Municipality level, greater replication of ideas in other regional areas, and an increased media awareness of how local projects fit into the bigger strategic goals on energy and climate change.

Summer months saw teams of academics and students from all over the world engaged in various activities at the Kerkenes. In 2005, a group of architecture students from the METU worked with children from the village to produce 'papercrete' (paper concrete) from recycled paper and other alternative building materials. In September the Classe de Première from the Lycée Charles de Gaulle in Ankara did a village survey. Activities also included the production of stabilized mud bricks with the Parry Brick Press.

This press was also used to compress waste paper into briquettes to be burnt as fuel in the traditional stove during winter months. Young girls were organized to make bead necklaces and bracelets for sale to tourists. Proceeds of the sale enabled the girls to buy materials to sustain their production.

Meanwhile, meetings with the villagers were helpful in: discussing and gaining acceptance for the use of solar energy for cooking and domestic water heaters; brainstorming on ways to take advantage of this renewable source of energy for income generating activities; evaluating the use of a village wind pump; and realizing the importance of water management schemes (such as drip irrigation and the use of energy efficient greenhouses) to the success of the permaculture and organic farming program.

Şahmuratlı Village viewed from the ancient Iron Age city on the top of the Kerkenes Dağ



Şahmuratlı Village possesses a world-class cultural heritage site in ancient Pteria, an Iron Age mountain-top city founded on the Kerkenes Dağ. Therein also lies the Kerkenes Eco-Centre, by itself also world-class in its efforts at piloting schemes for renewable energy and appropriate technologies against a background of climate change, socio-economic inequality and rapid depopulation of rural areas in pursuit of urban growth. Amid these, OR has and continues to offer a platform and methodology for scientifically discussing and supporting local development and the improvement of living conditions.

### References:

F. Summers, S.T. Elias-Özkan and G.-W. Weber, Kerkenes Team: A Short Presentation and Demonstration on the Kerkenes Eco-Center Project Activities, EURO-ORD Workshop  
 "Workshop on OR for Developing Countries Young Researchers and PhD Symposium", Prague, Czech Republic, July 7, 2007.

G. Summers and F. Summers, The Kerkenes Dağ Project. Chapter 16 in *Ancient Anatolia: Fifty Years' Work* by the British Institute of Archaeology at Ankara, Roger Matthews, editor, British Institute of Archaeology, Ankara, Turkey, 1998; ISBN 1 898249 11 3, available from Oxbow Books, Park End Place, Oxford OX1 1HN.

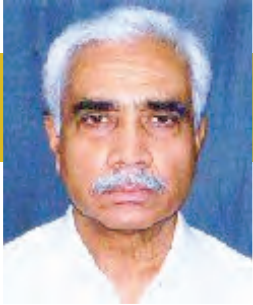
### Links used and recommended:

<http://www.kerkenes.metu.edu.tr/>  
<http://www.kerkenes.metu.edu.tr/keco/03photogallery/09ph/index.html>  
<http://www.kerkenes.metu.edu.tr/kerk1/12propub/articles/ancanat/index.htm>  
<http://www.jstor.org/pss/3642913>

**Acknowledgement:** Compliments and thanks to Kerkenes Eco-Center Project for courtesy and support 🌐







# OR for Development Section

**From the Section Editor, Arabinda Tripathy:** I shall appreciate your comments to improve this section in the IFORS News. Please send your comments to [tripathy@iimahd.ernet.in](mailto:tripathy@iimahd.ernet.in).



## 2011 IFORS Prize for OR in Development

Dr. Subhash Datta <[subhash.datta@gmail.com](mailto:subhash.datta@gmail.com)>, Prize Chair 2011

Consistently committed to the promotion of OR in developing countries, IFORS has continued to improve the IFORS Prize. The 2011 IFORS Prize for OR in Development competition differed from those of the previous years in the following ways:

1. The requirement that authors must be nationals of developing countries was removed;
2. The Prize money was doubled; and
3. Finalist papers went through the first round of the refereeing process of the IFORS Journal, International Transactions in Operational Research (ITOR). As is the previous practice, all competition papers are considered submitted to the journals without guarantee of acceptance.

The 2011 IFORS Prize competition recognized 22 full papers as valid entries. The process of selection was very rigorous and the eight-jury board was unanimous in selecting the eight finalists from eight countries. It was observed that some of the submissions have a team of researchers from both developed as well as developing countries.

All the 6 finalists (two papers were not presented since the authors could not come at the last moment due to reasons beyond their control) presented their papers on the first day of the conference. The criteria used for the selection process included: problem definition, creativity, appropriateness, OR content, structure and organisation of the paper, stress on development, actual/ potential impact of the study, oral presentations and handling of questions.

This evaluation led to the following decisions which were announced during the conference banquet of 14 July:

First prize certificate and prize money of USD 4000 was presented to Joao Neiva de Figueiredo and Miguel Angel Marca Barrientos for their paper titled "A Decision Support Methodology for Increasing School Efficiency in Bolivia's Low Income Communities". The paper used a DEA based DSS methodology for increasing School Efficiency with available scarce resources and sharing best practices across the network. The model was implemented and is continuing to impact a huge number of disadvantaged children in Bolivia's poverty stricken areas. The paper was recognised for the approach and methodology to improve effective education as a means to help the most disadvantaged section of society move out of poverty.

The Runner-up prize certificate and prize money of USD 2000 was presented to Angel Luis Udias, David Rios Insua, Javier Cano and Hocine Fellag for their paper titled "Cost Efficient Equitable Water Distribution in Algeria: A Bi- Criteria Fair division Problem with Network Constraints". The paper addressed water distribution problem in Kabylia region, Algeria by using an ILP model to resolve the multi criteria decision problem in a cost-efficient manner. Various alternatives were generated to improve the



▲ Dominique de Werra, Elise del Rosario, Subhash Datta pose with authors of finalist papers Dr. Dileep De Silva (Sri Lanka), Tiande Guo (China), Andres Weintraub (Chile), Raphael Leao (Brazil), Joao Figueiredo (Bolivia), and the representative of Javier Cano (Algeria)

current management processes and resolve implementation aspects.

Led by Subhash Datta, other members of the jury were Jan Van Vuuren, Celso Carneiro Ribeiro, Elise del Rosario, Leroy White, Hugo Scolnik, Theodor Stewart, and Arjan Shahani. Only the first four were around to participate in the final judging, the results of which came out after a very long deliberation. The other four finalists (in

no specific order) who were presented certificates of distinction were:

1. Guo Tiande, Gao Suixiang, Zhao Tong, Chan Ge, Jiang Zhipeng, Sun Jing, Wu Gepeng, Han Congying, Wang Shenna, Zhang Wei and Kong Ruiyuan, "High Precision Coverage Optimization Models and Algorithms for GSM and TD-SCDMA Networks";
2. Vladimir Marianov, Fernando Araya, Dell Robert, Donoso Pedro, Francisco Martinez and Andres Weintraub, "Optimizing Location and Size of Rural Schools in Chile";
3. Dileep De Silva and Sally Brailsford, "Using System Dynamics to Address Dental Workforce issues in Sri Lanka: A Practical Approach in a Developing Country"; and
4. Leao Raphael, Oliveira Fabricio and Hamacher Silvio, "Dealing with Uncertainties in the Biodiesel Supply Chain Based on Small Farmers: A Robust Approach".

The end of the July 14, 2011 presentation ceremonies marked the beginning of preparations for IFORS Prize 2014. The Prize has undergone many changes since its start in IFORS1987. Even as more changes will be introduced, the goal remains the same - to recognize practical OR work conducted to assist specific organizations in their decision-making process with the end of contributing to advancement of a developing country environment. 🌐



▲ D. de Werra hands USD 4000 winner check to Joao Figueiredo



# Balaban Valley Project : A Contribution to Better Living Conditions

Ali Gökmen <agokmen@metu.edu.tr>, Inci Gökmen <igokmen@metu.edu.tr> Department of Chemistry, Middle East Technical University, Ankara, Turkey  
Gerhard-Wilhelm Weber <gweber@metu.edu.tr> Institute of Applied Mathematics, Middle East Technical University, Ankara, Turkey

Nearly 50% of world population still lives in villages. The population of the world is shifting from rural to urban at an increasing rate. This trend is a threat to sustainability due to the higher ecological footprint of urban compared to rural living.

In Turkey, nearly 25 % of the population still lives in rural areas. In its bid to join the European Union, Turkey is encouraged to reduce the rural population to the level of Europe of about 7%. Total arable land is 200.000 km<sup>2</sup> out of the total area of 780.000 km<sup>2</sup>, decreasing at a rate of 2.9% per year since 2005. This negative trend is threatening food security and quality.

Ankara, the capital city of Turkey with a population of 4 to 5 million, gets its food from the Southern and Western areas of country through 50 thousand truckloads traveling 50 million kilometers per year. The CO<sub>2</sub> emission of this activity alone is estimated to be about 75 thousand tons.

Sustainability is a global issue addressed by the United Nations as well as the World Summit on Sustainable Development held in Johannesburg in 2002. Transforming traditional villages into eco-villages is expected to improve the attractiveness of rural life, hopefully contributing to sustainability of the community, the whole country and the world. An eco-village is a community designed through participatory processes, thus encouraging



Community supported agriculture, CSA at Güneşköy

the development of personal and community values. The four dimensions of sustainability: ecological, social, economic and cultural, reinforce one another. Ecological sustainability involves mimicking natural systems, where waste of one process becomes the resource of another. It involves production using cyclic conversions with minimal or no waste, in contrast to the familiar linear production system. Sustainable economics is valuing all natural resources like clean water, soil, food, and keeping assets within the system. An important aspect of life in eco-villages is the social dimension that involves self-governance, participatory decision-making, conflict resolution and other activities that help community building such as games and celebrations. Admittedly, in this time of rapid technological advancement, culture, which represents the collective wisdom of societies that has been built up over time, is degrading very fast.


Balaban Valley is a rural area located 60 km east of Ankara. An eco-village initiative Güneşköy (Sun Village) started in 2000 as a cooperative near a traditional village Hisarköy with about 300 inhabitants. The members of Güneşköy live in Ankara, work as academicians, engineers, architects, and have close contact with the rural site. A community-supported certified organic agriculture was initiated at Güneşköy 6 years ago, where ecologically grown vegetables are distributed to people in the city. This project has been a model for the farmers in nearby village Hisarköy, where many farmers have adopted organic farming. They sell their organic produce at an organic market in Ankara at a good price, making this an attractive activity to pursue. In general, farmers are hesitant to shift to other methods

**An important aspect of life in eco-villages is the social dimension that involves self-governance, participatory decision-making, conflict resolution and other activities that help community building such as games and celebrations.**

unless they have proof that the change will bring about an improvement in their economic state. They cannot take risks with their only source of income. In this way, the Güneşköy eco-village initiative provides the proof that efficient food production and economic viability is possible.

Güneşköy is a member of Global Ecovillage Network (GEN). The experiences gained in eco-villages are exchanged worldwide through this network. Many educational programs have been developed within the network. Through EU funds, like Grundvig, the opportunity to learn the tools of sustainable living are made available to a lot of people. Three workshops on Sustainable Living by Güneşköy have been organized at Middle East Technical University (METU) and Abant İzzet Baysal University. These workshops, covering the ecological and social modules of Ecovillage Design Education, has been participated in by 120 participants to-date. Another 40 attendees benefited from a workshop organized at METU on Planning for Sustainable Living. In the last two years, at least 5 workshops have been organized on Permaculture (designing nature by creating supportive relationships, which will minimize energy required from the outside). About 500 volunteers from cities have been trained on sustainability and they are encouraged to share their knowledge with others. Several communities have formed 10 to 30 people working on applications of their sustainability training courses to rural and urban projects. Güneşköy, in an effort to gather ecological living groups in Turkey under the EKOYER network, has held several meetings with these groups.

The Güneşköy project in the Balaban Valley was one of the main initiatives when the EURO Working Group on OR for Development (EURO ORD); <http://www2.ing.puc.cl/~fcrespo/eurofdv/> was launched and approved by the EURO Executive Committee in 2006.

The international Operations Research community, through EURO and IFORS, is invited to share experiences in this area and give suggestions for refinements or new models, with the hope that collectively, we can demonstrate how our interdisciplinary field with its quantitative methodologies, can enable the world to better face the various challenges of rural life and sustainability. 



Global Ecovillage Network, sharing experiences of sustainable living worldwide at General Assembly meetings







▲ A farmer from Hisarkoy selling his produce at organic market in Ankara



▲ Permaculture workshop for designing small scale ecological settlement

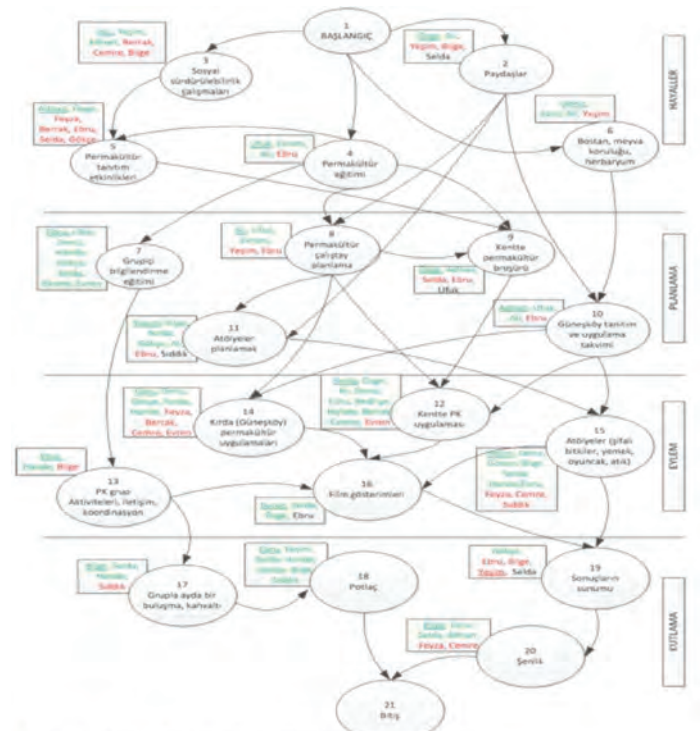


Figure 6. A work flow developed for a community project

## OR in Food Banking

Theo Stewart <theodor.stewart@uct.ac.za>

Over the past three years, two MSc students at the University of Cape Town (UCT) have undertaken projects in support of the newly established food bank organization in South Africa. In essence, a food bank sources donated food from manufacturers, wholesalers, retailers, and others and then redistributes it to social service organisations ("agencies") such as soup kitchens, nutrition centres, disadvantaged schools, orphanages, old age homes and HIV/Aids clinics, who in turn provide meals to underprivileged and vulnerable individuals.

The concept of food banking arose in the USA. A Cape Town Foodbank Forum (CTFBF) was established towards the end of 2007 as a working group of interested and affected parties with the aim to plan and establish a food bank in Cape Town, which was to become known as Foodbank Cape Town (FBCT). This action stimulated similar initiatives elsewhere in the country, and towards the end of 2008 Foodbank South Africa (FBSA) was formed by amalgamating, amongst others, the resources of Feedback Food Redistribution, Lions Food Project and the Robin Good Initiative. This was done after extensive consultation with hundreds of organisations to investigate how South Africa's food resources could be used more effectively to feed the hungry. The aim of FBSA is to establish a network of community food banks in urban and rural areas throughout South Africa in order to reduce hunger and food insecurity.

The projects at UCT worked largely with the Cape Town activity (FBCT). The first project started with problem structuring exercises, using soft systems methodology, causal mapping and value tree structures from multicriteria decision analysis. This led to the identification of two critical immediate problems, namely the size and location of the warehouse that needed to be procured, and the prioritization of welfare agencies that would be supported (as it was not possible to support all needs in the region).

The warehouse sizing and location involved relatively conventional ("hard") OR approaches. The sizing needs were based on statistical analyses of flows of goods and donations, volume to mass ratios, and perishability of goods. For analysis of location options, needs were related to a spatial analysis of poverty indices across greater Cape Town, with the assumption that larger amounts would need to be distributed in areas of greatest poverty. Routing algorithms, based on the main road networks in the metropolitan area, were used to assess cost of distribution from various locations. In the end, a final choice had to be made on the basis of what

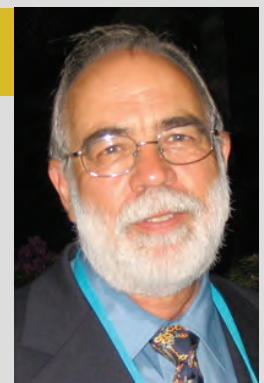
sites were available at affordable cost, but the more detailed analysis did serve to highlight the feasibility and suitability of the sites that were offered to FBCT.

An approach using multiattribute value theory, derived from the initial multicriteria value tree structure, was used to score agencies applying for support. Some of the key criteria modeled in this way were the ranges of needs addressed by the agency, the relative poverty needs in the areas in which they were active, and the management of the agency including assessments of the long-term sustainability of the agency. An extension of the value functions took into consideration the relative values of providing only proportions of the desired amounts. Typically, it was judged that there were thresholds for each agency below which any allocations would not be useful, while values above this threshold followed more of a concave shape (i.e. decreasing marginal returns).

The second project followed directly from the prioritization studies. The aim was to provide an operational implementation of the agency priorities, by means of a decision support system for allocation of available food on a day-to-day basis, from the warehouse to agencies. By this time, the national food bank (FBSA) was in full swing, and further problem structuring (causal mapping) was undertaken with the broader organization before designing the decision support system. The student also spent time at the warehouse to watch the daily operations in progress.

The decision support model was used in two modes. Firstly, it was embedded in a simulation model, in which the decision support outputs were processed through tentative decision rules for the daily allocations. By experimenting with different sets of decision rules, something approaching optimal matching with long term goals of FBSA was established. These could be incorporated into the operational decision support system (DSS). Then the DSS was coded into a system based on Microsoft Excel that could be used by the managers on the warehouse floor.

The DSS has undergone some testing with the warehouse floor staff and early results are encouraging. Parallel work at another university (Stellenbosch) is looking at the problem of routing delivery trucks from the warehouse depot. It is hoped that this collaboration with FBSA will continue for many years, as there remain many more issues to address. 🌐



Duckworth Lewis

The method  
and the men behind it

## Duckworth Lewis

The method and the men behind it by Frank Duckworth and Tony Lewis, 2011, SportsBooks Limited, Cheltenham, UK, pp 213. ISBN: 9781907524 00 4. 19.17 US dollars.

**Both OR people who love sport, particularly cricket, and cricket followers will enjoy this book immensely.**

Sport has world-wide appeal and attracts millions of spectators. Increasingly, operations researchers are using OR and quantitative methods in sport. Frank Duckworth and Tony Lewis are certainly the most famous operations researchers internationally and arguably also the most famous modern partnership in cricket. Cricket is played in most countries, with the countries currently competing at the highest level including England, India, Pakistan, Sri Lanka, Bangladesh, Australia, New Zealand, South Africa, Zimbabwe and the West Indies.

It is a game, with some similarities to baseball, which traditionally stretches over a number of days. In the early '70s the limited overs, one-day version of the game was introduced to make it more exciting and spectator friendly. Both teams have 50 overs to bowl (there are 60 and 40 overs versions and lately also 20 overs matches) with 10 wickets (or batsmen who need to be dismissed) in hand. Initially the one team bowls while the other team bats and the idea is to get as many runs as possible before all the batsmen are dismissed or all the overs have been bowled.

Many times nature interferes during these matches with, for example, rain interruptions or bad light stopping play, and the

challenge then is how to adjust the targets in a fair way during these one-day matches. The dilemma is illustrated very well with what happened during the world cup semi-final between England and South Africa in 1992 at the Sydney Cricket Grounds. It was a 50-overs match and England scored 252. South Africa in turn needed to get 253 to win. South Africa stood at 231 for 6 wickets and needed 22 runs from 13 balls, with 4 wickets in hand - and then it started raining. At that stage the match could have gone either way. The match resumed but with the rules ("Most Productive Overs" method) that were used at that stage, South Africa had to get the 22 runs with just one ball! There was an outcry and the match ended as a farce. Something fair had to be done and that is where Duckworth and Lewis stepped in.

Duckworth Lewis, the book, is somewhat autobiographic and in the first two chapters both authors introduce themselves giving their respective story. They tell something about their backgrounds and how they got interested in looking at a method that could be used to address the problem of setting fair targets if rain interrupted one-day matches. Both have strong quantitative backgrounds and both were interested in sport in general, and cricket specifically. Independently they started looking at the challenge facing cricket.

In chapter 3 they give their views on why a proper method was required. In the next chapter they describe how they got to know about each other and how they then combined forces. Early on, Duckworth presented a paper on this topic; Lewis heard about this, enquired about getting a copy and at some point they made personal contact. This is so typical of the way things happen in the research arena. It turned out that they lived fairly close to each other and met face-to-face in January 1995. A conveniently located pub became their future meeting venue!

As is the case with most formulas that are developed, they had an initial formula but realised it was wrong and required refinement. It was wrong because the question it should have been trying to answer was: "How many runs can be made, on average, with  $u$  overs remaining and  $w$  wickets down?" This is the essence of their insight and contribution, the realisation that in limited overs cricket there are two resources that are critical, namely

the overs that remain as well as the wickets in hand. Using data from hundreds of past matches, where the runs scored at the fall of each wicket were captured, they started to develop and refine the method. A number of things then happened: They approached the Test and Country Cricket Board and made a presentation on their approach while they also formally agreed to join forces. Duckworth was to concentrate on the computer code that they had developed and Lewis on "methods of presentation".

In chapter 5 they describe the efforts in presenting their method to the International Cricket Council (ICC). The response from the ICC members were mixed, however soon afterwards the Zimbabwe Cricket Council indicated that they would use it during the tour of England - this was at the end of 1996. The first time the Duckworth/Lewis (D/L) method was actually used was on New Year's Day 1997, when the second one-day match was interrupted by rain. The method worked although the calculation of the runs required was short by one run. There were sceptics, especially amongst the media, as they were not mathematically oriented and found it difficult to understand the method. There were even jokes made about the method.


Duckworth and Lewis made a few critical decisions during that period. They presented the method to peers at a statistical conference. There were some teething problems initially and everything was not totally correct, but the two decided to remain quiet and did not confess that there were minor mistakes, while they corrected these in the quiet. In addition, it was crucial to communicate and present the method in a simple, understandable way. Towards the end of 1997, more and more countries started to accept and adopt the method. For the 1999 Cricket World Cup, a comprehensive guide, in the form of a booklet, was produced. The method was used successfully and shortly after that world cup it was declared to be the official standard throughout the world. Frank Duckworth and Tony Lewis became famous celebrities in cricketing circles!

As the method was used more frequently, some changes were required and these are discussed in chapter 9. It was during that period that the first paper outlining the method was published in the Journal of the Operational Research Society (1998, Vol 3, No. 3, pp 220-227). Various challenges were experienced through the use of the method across the world and these are covered in the next chapter. Duckworth and Lewis received many invitations to important cricket matches where they were the guests of the cricket authorities. However, the two clearly expected more and this they elaborate on in chapter 11. In this chapter they possibly go a bit overboard in terms of expressing their expectations of being treated much more as celebrities by the cricket authorities.

Cricket is constantly changing and a new limited-over version of the game has been introduced, namely Twenty20. This posed some challenges to the D/L method and some refinements were required. Nevertheless, the method can also be used in this instance. In chapter 14 the authors ask the question "What of the Future?" Over time, they have developed a number of enhancements and "fringe" proposals but have not been successful in convincing the authorities to implement these.

The last two chapters address the issue of "fame without fortune" and what they believe "the secret was to their success". There are a number of appendices focusing on describing the method and how it works, plus a section of frequently answered questions. A full list of notations, abbreviations and symbols is given as well as a comprehensive bibliography and the D/L tables.

The D/L method has been used successfully worldwide for the past 15 years. The individuals who had developed this method have between them published five of their papers on the topic in the Journal of the Operational Research Society. For their services to cricket and also to the mathematical sciences, they both received MBEs in June 2010. They are, indeed, the most famous operations researchers!

Their book, Duckworth Lewis, is not only a fascinating story but it also explains the development of the method and how it works in detail. Both OR people who love sport, particularly cricket, and cricket followers will enjoy this book immensely. 





# The Making of EORMS

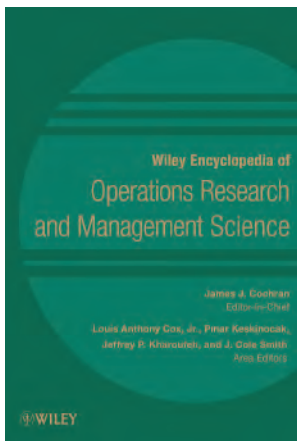
James Cochran <jcochran@cab.latech.edu>, INFORMS



This is the story of how a broad and dynamic encyclopedic treatment of operations research was conceived, designed, and created. While the story may not be as dramatic as Simon Winchester's *The Surgeon of Crowthorne: A Tale of Murder, Madness and the Love of Words* (released in Canada and the United States under the title *The Professor and the Madman: A Tale of Murder, Insanity, and the Making of the Oxford English Dictionary*), there were several interesting twists and turns in the process of creating this encyclopedia.

## The Initial Approach

In November of 2006, while attending the INFORMS conference in Pittsburgh, I was approached by Beth Golub of John Wiley and Sons with an interesting proposition: would I be interested in working with Wiley to create a multivolume encyclopedic treatment of operations research and management science? Wiley had worked with academicians from dozens of disciplines to create a myriad of encyclopedias, and now Susanne Steitz-Filler, a colleague of Beth's and an Editor in Mathematics and Statistics at Wiley, was interested in extending Wiley's line of encyclopedias to our discipline.



This idea was simultaneously daunting and intriguing (a combination that decision analysts tell us will put you at either extreme of the risk-reward spectrum!). While this would obviously be a challenging

and consuming initiative, I felt that if this were done well it would be an incredibly valuable contribution to our discipline. After discussing this with Beth for a few minutes, I agreed to consider her proposal, and Beth arranged for me to meet with Susanne.

In my meeting with Susanne I found her to be very knowledgeable about ORMS and enthusiastic about this project. She assured me that Wiley would allow me a great deal of creative latitude in designing the structure of the encyclopedia and a great deal of flexibility in determining the breadth and depth of coverage of the discipline. Susanne also outlined the various ways that Wiley would support the development of the encyclopedia. After taking some time to review several Wiley encyclopedias (with a strong focus on the impressive sixteen volume *Encyclopedia of Statistical Sciences* that was edited by Samuel Kotz, Campbell B. Read, Narayanaswamy Balakrishnan, and Brani Vidakovic), I was convinced that the proper pieces were in place. When Susanne assured me that I would have primary responsibility for content (i.e., the fun stuff) while Wiley would take care of all other aspects (i.e., the drudgery), I agreed to become the founding Editor-in-Chief of the Wiley Encyclopedia of Operations Research and Management Science (or what we would come to call

EORMS).

The final step in the first stage of the process was to determine our objectives - what did we want to accomplish by establishing an encyclopedic treatment of ORMS? We eventually decided that through EORMS we wanted to provide:

- accessible introductions to basic ORMS concepts, principals, techniques, and methodologies for potential readers with little or no background in ORMS;
- detailed reviews of key areas of ORMS research, at an appropriately rigorous level, for graduate students and researchers who wanted to properly use ORMS concepts, principals, techniques, and methodologies;
- highly technical coverage of specific topics for graduate students and researchers who needed access to the cutting edge of some ORMS concept, principal, technique, or methodology;
- extensive and current citations of articles published by peer reviewed academic journals on ORMS concepts, principals, techniques, and methodologies;
- presentations of successful and interesting examples of ORMS methodology in practice or in historical contexts; and
- information on activities undertaken by ORMS societies from around the world.

In addition, we wanted to:

- publish articles written by authors from all over the world who are regarded as experts in their respective areas of research and/or application;
- create a important resource that would have enduring value;
- establish an approachable reference for those who are unfamiliar with ORMS to learn more about the discipline and what it has to offer;
- ensure a consistently high level of exposition across EORMS content; and
- create the encyclopedia in a timely manner (ORMS is a dynamic discipline, and delays could render articles accepted early in the process obsolete).

These objectives would drive many of the ensuing decisions to be made about the structure and organization of the encyclopedia and its staff as well as the various procedures we would establish.

## Developing a Structure

ORMS is at once both blessed and cursed by its interdisciplinary nature and broad range of potential applications. It is truly ironic that by virtue of the breadth of its potential usefulness, ORMS is extremely difficult to define and its scope difficult to delineate. Any attempt to create an encyclopedic treatment of ORMS had to start with a well-founded definition of the discipline, and we ultimately settled on the development, use, and application of analytic approaches to improve processes, operations,

and decisions. This definition allowed for consideration of theory, methodology, and application; quantitative and qualitative approaches; a broad interdisciplinary nature; and use across the entire spectrum of enterprises.

No single person could be expected to serve as an expert across the broad expanse of ORMS, so after the EORMS definition of ORMS had been established, it was imperative that we divide this broad discipline into smaller segments and find individuals who could work with me to manage these smaller segments. I consulted with several colleagues on this issue and while identification of mutually exclusive segments proved to be unrealistic, I ultimately was able to find a strong general consensus; the discipline naturally would fall into three segments:

- Optimization Models, Techniques, and Algorithms
- Stochastic Models
- Decision and Risk Analysis and Game Theory

At this point I decided that, in order to spread the workload across more individuals, Applications and History would constitute a fourth segment. These segments would be referred to as Areas, and each of these Areas would be led by an Area Editor.

The search for Area Editors would now commence. >>

*ORMS is at once both blessed and cursed by its interdisciplinary nature and broad range of potential applications. It is truly ironic that by virtue of the breadth of its potential usefulness, ORMS is extremely difficult to define and its scope difficult to delineate.*



>> I wanted to find an individual for each Area who had great enthusiasm for her/his Area and the encyclopedia; had a broad fundamental understanding of theoretical, methodological, and applied research in her/his Area; knew the important contributors to research in her/his Area; and was reliable, affable, and easy to work with. Here again I was very fortunate; I found an individual in each Area who without question met all of my criteria. Cole Smith of the University of Florida agreed to become the Area Editor for Optimization Models, Techniques, and Algorithms; Jeff Kharoufeh of the University of Pittsburgh would become the Area Editor for Stochastic Models; Tony Cox of Cox Associates would be the Area Editor for Decision and Risk Analysis and Game Theory, Decision Theory, and Game Theory; and Pinar Keskinocak would be the Area Editor for Applications and History.

It was immediately obvious that not all articles included in EORMS would (or should) be written at the same technical level, so while working on dividing the discipline into Areas, we also began developing categories for the types of articles to be included in the encyclopedia. We wanted to organize the encyclopedia in a hierarchical article structure designed to make its content as widely useful and accessible as possible. With this in mind, we wanted to include some introductory/overview articles on very basic topics (linear programming, queuing, simulation, etc.) that would be extremely accessible to all readers. Naturally, advanced articles that provided more technical detail (on topics such as interdiction models, parallel discrete-event simulation, and guided local search) would be important, and technical articles that provided even more detail on very specific concepts (such as partially observable Markov decision processes, Bayesian aggregation of individual beliefs, and Lovász-Schrijver reformulation) would be included. We also wanted to include articles that summarized applications in broad areas (such as supply chain management, medicine and health care, telecommunications, and finance), articles that gave historical perspectives, and articles that provided information on ORMS societies from around the world. Eventually the four Area Editors and I arrived at the following designations:

- Introductory Reviews - approximately 4,000-5,000 words that are intended to provide a broad and relatively non-technical treatment of core topics at a level suitable for advanced undergraduate students as well as scientists without a strong background in the field;
- Advanced Articles - approximately 4,000-5,000 words aimed at graduate students and researchers, that provide reviews of key areas of research in a citation-rich format similar to that of leading review journals, with two key differences:
  - articles will be updated regularly by their authors so that they continue to represent the current state of knowledge in their respective fields, and
  - articles will be commissioned in all key areas to create an encyclopedic database of review-type information.
- Technical Articles - approximately 2,500-3,500 words written as "breakouts" from the advanced articles that provide more rich and detailed discussions of key concepts or specific topics addressed in the reviews.
- Case studies/biographical sketches/historical

interludes/society articles - approximately 1,500-2,500 words that provide an opportunity to present successful and/or interesting examples of ORMS methodology in practice or in historical contexts. These articles will be less technical in nature and aimed primarily at graduate students and practicing researchers.

The next consideration was maintaining the encyclopedia's currency - nobody involved was about to make the required investment of time, effort, and capital only to watch the encyclopedia eventually become obsolete. This issue was a critical aspect of my initial discussions with Wiley, and Susanne and I had been in agreement from the onset on the importance of establishing and maintaining an on line version of the encyclopedia that could be updated quickly and regularly.

The four Areas were still extremely broad, so another consideration was the further division of each of the four primary areas into more specific and manageable Topical Areas. This step was key as it would allow us to identify individuals with even more specific expertise who could serve as Topical Editors; these Topical Editors would help me and the Area Editors deal with content issues at the micro level. Here we were again extremely fortunate; we were able to recruit the following highly regarded group of scholars to fill these roles.

- Ali Abbas, University of Illinois
- Shabbir Ahmed, Georgia Institute of Technology
- Gad Allon, Northwestern University
- Vicki Bier, University of Wisconsin-Madison
- W. Art Chaovalitwongse, Rutgers University
- Alan Erera, Georgia Institute of Technology
- Joseph Hartman, University of Florida
- John Hasenbein, University of Texas
- Phil Kaminsky, University of California
- Marc Kilgour, Wilfrid Laurier University
- Michael Kuhl, Rochester Institute of Technology
- Vidyadhar Kulkarni, University of North Carolina
- Jeffrey Linderroth, University of Wisconsin-Madison
- Arne Lokketangen, Molde College
- Lisa Maillart, University of Pittsburgh
- Jason Merrick, Virginia Commonwealth University
- Tava Olsen, Washington University in St. Louis
- Georgia Perakis, Massachusetts Institute of Technology
- Anne Robinson, Cisco
- Fabrizio Ruggeri, CNR IMATI
- Andrew Schaefer, University of Pittsburgh
- James Spall, Johns Hopkins University
- Julie Swann, Georgia Institute of Technology

The last step in establishing the structure was for the Area Editors and me to work with the Topical Editors to build our headword list (the specific concepts for which we wanted entries in the encyclopedia) and distinguish between the critical topics (topics that could not be omitted from a credible encyclopedia) and the noncritical topics (topics that, while certainly desirable, could be omitted from an encyclopedia without damaging the encyclopedia's credibility). While the headword initial list was completed in June of 2008, this list was dynamic (as we had planned); we anticipated that as we progressed we would learn a great deal about what should

and should not be included in an encyclopedia of ORMS. As a result we would revise the EORMS headword list frequently to reflect our greater understanding.

## Developing the Processes

In the latter stages of developing the structure of the encyclopedia and the structure of the EORMS staff, we set our sights on the various processes that would have to be in place to facilitate the timely creation of EORMS. We would need processes for identifying prospective authors, inviting prospective authors and reviewers, receiving submissions and reviews, making recommendations and final decisions, copy editing, production, distribution, and marketing.

Because it was i) vital to the credibility of EORMS content, ii) inextricably linked to most of the other processes, and iii) a potential bottleneck, we first focused on the review process. We elected to use a review process that mirrored the processes used by top peer reviewed academic journals. Each submission to EORMS would be subject to review by two individuals who were familiar with the topic covered by the submission; these reviewers would submit their reports to the corresponding Topical Editor, who based on the reviewers' reports and her/his own thoughts would then submit a recommendation to the corresponding Area Editor. The Area editor would then make a decision. If a potential conflict of interest arose, I would fill in for the Area Editor or Topical Editor with the potential conflict. If the reviewers, the Topical Editor, and the Area Editor could not reach a consensus on a submission, I would make the final decision. Because they did not include scientific content, articles about OR societies were reviewed by a single reviewer.

At each step of the review process the focus was on

- the contribution of the article;
- the quality of exposition;
- the accuracy of the article;
- the completeness of the article; and
- the conciseness of the article.

Most submissions were accepted after the second round of reviews; several required more than two rounds of reviews, a few were accepted after the first round of reviews, and some were unfortunately rejected.

Because we wanted to facilitate participation by authors worldwide and rapid turnarounds of reviews, it was imperative that we establish an on-line submission and management system. Wiley had used Manuscript Central (now ScholarOne) systems for other encyclopedias with good success, and most members of the OR community were familiar with these systems, so we elected to implement a similar system. Through this system we could invite prospective authors and reviewers; receive and access submissions, reviews, recommendations, and decisions; notify authors of decisions; and track EORMS' progress at all levels.

We still had to grapple with identifying prospective authors who could write articles on the topics on our headword list and finding reviewers who were qualified to provide thoughtful, constructive, and thorough evaluations of the submissions. >>>





>> The Area Editors and I worked with each Topical Editor (taking advantage of her/his unique expertise) to identify one or more prospective authors for each potential. When a prospective author accepted an invitation to write for EORMS, s/he would suggest two or three potential reviewers for the article. The Topical Editor, who was responsible for inviting the reviewers for all papers in her/his Topical Area, could use these suggestions or invite other reviewers that s/he selected.

While the Area Editors, Topical Editors, and I were establishing processes for identifying prospective authors, inviting prospective authors and reviewers, receiving submissions and reviews, and making recommendations and final decisions, Wiley was instituting the processes for copy editing, production, distribution, and marketing.

Finally, we documented the structures and processes we had established in the Wiley EORMS Author's Guide. This forty-six page pdf file, which was distributed to all authors, reviewers, and Topical and Area Editors, provided a great deal of guidance and greatly reduced the number of questions I received from those involved with creating EORMS content.

### Pushing Forward

On the whole, we were hitting our marks with incredible consistency. At the onset I suspected that meeting periodic interim deadlines on a project of this magnitude would be unlikely, but our structure and processes generally worked as planned. Occasional issues arose (for example, a few authors had difficulty submitting LaTeX versions of their articles), but the EORMS staff generally resolved these minor issues rapidly. The top level of the EORMS Editorial Board (the Area Editors, Susanne, and I) met for one hour in monthly conference calls to discuss ways to resolve issues that had arisen/review ways that issues had been resolved, update each other on the status of the tasks for which we were responsible, identify where bottlenecks were developing, and devise strategies for alleviating these bottlenecks before they became problematic and threatened to delay the production of the encyclopedia.

As one would expect, submission of articles was far from uniformly distributed. We initially experienced a high submission rate that reflected early enthusiasm over this new initiative, and then the submission (and resubmission) rate fell to what we considered to be an acceptable equilibrium rate for several months. The submission/resubmission rate picked up again as the July 15, 2010 deadline for accepting articles for the first print edition of EORMS approached, and by July 10th only a few articles that we had expected to include in the first print edition of the encyclopedia were still outstanding (several Area Editors, Topical Editors, and I continued to work on the encyclopedia from Portugal during this period while we attended the EURO XXIV Conference in Lisbon). On July 14th I flew from Portugal to Slovenia for the 8th International Conference on Teaching Statistics (ICOTS); when I arrived at my hotel in Ljubljana and logged onto the EORMS ScholarOne system I found that only six articles still required action, and by July 15th we had received and accepted five hundred and

ninety six articles. Even more noteworthy was that we had accepted articles covering every topic that we had originally designated to be critical! We had accumulated over 6000 well-written pages on a wide variety of topics – several fundamental, such as interdiction, approximate dynamic programming algorithms, Benders decomposition, and M/G/s/s queues; and some more esoteric, such as music and OR, ice hockey and OR, and art and OR. The eight volumes we had produced included contributions by authors representing over fifty nations, and the on-line version would be made available at a reduced cost through eligible libraries in developing nations through Research4Life (the collective name for three initiatives - HINARI, AGORA and OARE - that provides developing countries with free or low cost access to academic and professional peer-reviewed content online). Through EORMS's involvement in Research4Life, we hope to reduce the scientific knowledge gap between industrialized countries and the developing world, encourage OR education and application in developing nations, and assist in the attainment of six of the United Nation's eight Millennium Development Goals (<http://www.un.org/millenniumgoals/>) by 2015. Readers can find more information on Research4Life at [www.Research4Life.org](http://www.Research4Life.org).

### Final Stages

Now that the content for the first print edition of EORMS had been assembled, Wiley and I had to complete several tasks to support the publication of the encyclopedia by our target date. All articles had to be professionally copy edited; we had started this process several months earlier, but many papers still needed to be reviewed by professional copy editors. I had to write a preface. The print versions of the papers had to be produced (for both the first print edition and the downloadable pdfs to be made available through the on-line version of EORMS). HTML versions of all papers had to be created for the on-line version of the encyclopedia, and the special functionalities of the on-line version (the features that make EORMS particularly useful)

- downloading pdf versions of articles;
- accessing HTML versions of articles;
- searching the encyclopedia by keyword, topic, or author;
- accessing the abstract or bibliography of an article directly;
- hyperlinking citations available online through a user's library to the cited sources;
- pulling figures and tables from HTML versions of articles into highlighted displays;
- displaying the full citation of all articles (so one can cut and paste the reference information into a paper that cites an EORMS article);
- displaying author information and the history (i.e., hyperlinks to previous versions of an article) for each article; and
- hyperlinks within EORMS had to be beta tested. The hyperlinking of material cited in EORMS articles to the original source material through the user's library is particularly exciting; when an article in the on-line version of EORMS is accessed through a university system, each citation in the article that is available through that university's library is automatically hyperlinked to its source and can immediately be downloaded by clicking on the hyperlink.

Another key feature from the above list is the maintenance of the history of various versions of the article. This will allow researchers to cite EORMS articles with confidence - even though the encyclopedia is dynamic and will be revised regularly, one will always be able to find the version of the article that's/he has cited.

Wiley now stepped up its marketing campaign (which the company had initiated fifteen months earlier), was coordinating the production of both the print and on-line versions, and was preparing to distribute the print version. College and University librarians had learned of EORMS and were very excited about the project (two asked us to try to accelerate the production process so they could make EORMS available to its faculty and staff at an earlier date).

Once the copy editors had completed their task, I had to give the entire encyclopedia a final once over. As I was throughout this entire process, I again was taken by the quality of contributions to EORMS, the breadth and depth of coverage the encyclopedia had achieved, the magnitude of the task we had nearly completed, the large number of members of the OR community who had been involved (by my estimation, approximately 2000 individuals had written, reviewed, and/or edited for EORMS), and the good grace and professionalism all involved had displayed. On November 8, 2010 Wiley threw a wine and cheese reception at the Wiley booth in the exhibitor hall during the INFORMS Conference in Austin, Texas. Well over one hundred authors, reviewers, Topical Editors, Associate Editors, potential users, and innocent or curious bystanders joined together to enjoy each other's company and celebrate the impending publication of this encyclopedic treatment of OR.

### Final Stages

Both the print and on-line versions of EORMS are now available. We have received several new articles and will continue to add articles as we identify topics that warrant inclusion but are not yet covered by the encyclopedia. We will also continue to revise existing articles to reflect new developments and areas of applications in our dynamic discipline; occasionally we may determine that an article has grown too long and elect to divide the article into two slightly overlapping shorter articles. I look forward to receiving suggestions from you; please send them to [jcochran@latech.edu](mailto:jcochran@latech.edu).


During the process I had the happy experience of congratulating several contributors for additions to their families; we again congratulate these individuals and their families. I also had the sad experience of expressing my condolences to several contributors whose families had lost members, and we again extend our condolences to these individuals and their families. One author, my friend and colleague Valery Gordon of the United Institute of Informatics Problems at the National Academy of Sciences of Belarus, passed away before he could complete his article on the Byelorussian Operational Research Society. It was very important to Valery that he inform the worldwide OR community about the efforts of the OR community in Belarus, and after his death his >>



>> friend, colleague, and coauthor Nikolai N. Guschinsky completed and submitted the article. To Valery's family, friends, and colleagues I again extend my heartfelt condolences for your loss.

During the four years from the first time I was approached by Beth and Susanne about this initiative to now, I dealt with many issues that I never imagined I would have to consider; logo design, commercial website development,

dividing an encyclopedia into logical alphabetic break points that segment the reference alphabetically into reasonable volumes of approximately equal size, and several other non-ORMS issues. The process, while often grueling and occasionally frustrating, has been an exhilarating experience for me. I had an opportunity to work with many terrific individuals at Wiley and hundreds of tremendous colleagues who served as authors, reviewers, Topical Editors, and Area Editors. Each of these

individuals made a valuable contribution to EORMS, and the Topical Editors and Area Editors in particular devoted a great deal of time and effort. This encyclopedia was a monstrously large collaborative effort, and I look forward to working with everyone in the OR community to continue revising, upgrading, expanding, and improving EORMS. I hope you will agree that this is a valuable and important resource. 

## Publication News

### EURO Announces Three New Journals

**M.Grazia Speranza** <[speranza@eco.unibs.it](mailto:speranza@eco.unibs.it)>  
President, EURO

For many years, the European Journal of Operational Research (EJOR) has been the flagship and only journal of EURO. Created as an independent journal in 1976, EJOR became a EURO journal in 1990 and since then has continuously grown in terms of reputation and quality (through measures such as the impact factor) to be one of leading journals of the international OR community.

The EURO Executive Committee proposed to complement EJOR with journals specialized in some areas of particular interest to the EURO community. This proposal was presented and approved by the EURO member societies composed of: Austria, Belarus, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Lithuania, Netherlands, Norway, Poland, Portugal, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, United Kingdom. The following journals were officially launched during the IFORS 2011 conference in Melbourne:

- **EURO Journal on Transportation and Logistics**
- **EURO Journal on Computational Optimization**
- **EURO Journal on Decision Processes**

The journals are published by Springer, with editors in chief appointed by EURO.

**EURO Journal on Transportation and Logistics** – The EURO Journal on Transportation and Logistics promotes the use of operations research in the context of transportation and logistics. It is a forum for the presentation of original mathematical models, methodologies and computational results, as well as advanced applications. The journal publishes two types of papers: (i) research articles and (ii) tutorials. A research article presents original methodological contributions to the field (e.g. new mathematical models, new algorithms, new simulation techniques). A tutorial provides an introduction to an advanced topic with a view of guiding researchers and practitioners in the proper use and better appreciation of the relevant methodology.


The editor in chief of the journal is Michel Bierlaire. The first issues of the EURO Journal on Transportation and Logistics will be published in 2012. Manuscripts can be submitted through <https://www.editorialmanager.com/ejtl/>

**EURO Journal on Computational Optimization** – The EURO Journal on Computational Optimization is an effort to look at optimization models and solution techniques from a computational perspective. The journal features contributions that demonstrate the use of computers for the solution of optimization problems. The journal covers all kinds of optimization to include: linear and non-linear, combinatorial, stochastic, multi-objective. Contributions may focus on models, applications, algorithms, software, computational practice, or the links between these subjects.

The editor in chief of the journal is Martine Labbé. The first issues of the EURO Journal on Computational Optimization will be published in 2012. Submission details will be announced soon.


**EURO Journal on Decision Processes** – The EURO Journal on Decision Processes is envisioned to cover a range of theoretical, methodological, behavioural and organizational topics which contribute to the understanding and enhanced use of OR techniques in supporting different phases of decision making processes. It aims to present advances in problem structuring, decision analysis and multi-criteria decision aiding as well as address questions of process design, model validity and communication in using techniques like data mining, forecasting, optimization, simulation, and performance measurement to inform decision making. The journal is planned to contain reflective accounts on the use of OR techniques to support decision processes in application areas such as education, energy, engineering, environment, finance, health care, and operations management, among others.

The editor in chief of the journal is Ahti Salo. The first issues of the EURO Journal on Decision Processes will be published in 2013. Submissions will be accepted by 2012.

The EURO Executive Committee is confident that under the committed guidance of their respective editors in chief, leading researchers in their areas, and strong editorial boards, these journals will be a valuable addition to the host of reference journals now serving the entire operations research community. 



### IFORS News Granted an ISSN

IFORS News has acquired an ISSN starting with the September issue. The International Standard Serial Number (ISSN) is an internationally recognized identification number for serial publications, and as such, enables a serial regardless of language, country of origin, or similar titles, to be uniquely identified. Publications that have ISSN are entered into the international register of serial publications maintained by the ISSN International Centre in Paris. This international register lists over 1,000,000 serial titles and grows at an annual rate of about 50,000 new listings. [www.issn.org](http://www.issn.org) 






# ITOR indexed by ISI

Celso Ribeiro, ITOREditor, is pleased to report that the Institute for Scientific Information (ISI) has accepted the International Transactions in Operational Research (ITOR) into the Social Sciences Citation Index (SSCI), Current Contents: Social and Behavioural Science, and the Science Citation Index Expanded (SCIE), Current Contents: Engineering, Computing and Technology. Coverage starts from the 2009 volume.

ITOR will receive its first Impact Factor in the 2011 Journal Citation Report (JCR), to be released next year.

The journal Impact Factor is available from JCR, a product of Thomson ISI which provides quantitative tools for journal evaluation. The impact factor is a measure of the frequency with which the "average article" in a journal has been cited in the two years following its publication. 



## IFORS Board of Representatives Meeting **MINUTES**

Tuesday, July 12, 2011 4:30 – 6:30 p.m.

Meeting Room 1 - Melbourne Exhibition Centre, Melbourne Australia

Mary Magrogan <secretary@ifors.org>, IFORS Secretary

### 1) Welcome to our New Members

President Dominique de Werra welcomed the members of the Board of Representatives and announced our newest members of IFORS: Iran, 2009; Uruguay, 2009; Peru, 2010; and Estonia, 2011. He announced that the results of the ballot on the membership application of the Operational Research Society of Nepal will be announced in November 2011.

### 2) President's Report – Dominique de Werra

D. de Werra reminded the representatives that the 2009 and 2010 Annual Reports are contained in the IFORS News available on-line. The 2010 Annual Report is in their conference bags. After the representatives introduced themselves, D. de Werra presented the IFORS priorities which included Education, Scholarships, Developing Countries, Publications, and Conferences.

The members of the Administrative Committee were introduced along with their areas of responsibilities. New volunteer appointments were announced as follows: Elise del Rosario replaced Hans Ittmann as IFORS News Editor; IFORS VP representing EURO Elena Fernández replaced Martine Labbé, who resigned to devote her time to her new role as Editor of a new EURO journal; and Preston White replaced David Smith as Editor of International Abstracts in Operations Research.

### 3) Administrative Committee Reports

#### a) Treasurer's Report – Peter Bell

P. Bell reported on the publication revenues representing the past 20 years for both IAOR and ITORE. He reported that strong publication revenues and spending shortfall resulted in a 2010 surplus of nearly \$50,000. The core revenues have resulted in net gains for the majority of the past years. He presented the major expense items of Publications, Developing Countries Committee Programs and the IFORS office. IFORS closed 2010 with a \$1.4 million balance.

#### b) Conferences - Karla Hoffman

##### i) 2011 Melbourne Conference

After citing the 1000 attendees, wonderful tours, a great banquet, and three fabulous plenary speakers, K. Hoffman thanked General Chair Patrick Tobin, Conference Secretary Kaye Marion, and Program Chair Janny Leung for their hard work and dedication in making the Melbourne conference a great success.

##### ii) 2014 Barcelona Conference

K. Hoffman announced Barcelona Spain as the location of the 2014 triennial conference and introduced the IFORS 2014 General Chair Elena Fernández and announced the Program Chair Stefan Nickel. The

venue will be the new convention center, which is close to the beach with easy access to city center. She asked the representatives to go back and spread the word and to get involved early with the program by organizing a session or giving a talk.

### iii) 2017 Call for Host Society

K. Hoffman announced the call for proposals to host the 2017 triennial conference and mentioned the desire to rotate the conference among the four regional groups. As such, IFORS prefers proposals from North and South America since the last two conferences were in Australia and Africa. Expressions of intent should be sent to the IFORS Secretary by September 30, 2011.

It was mentioned that the conference registration fee has climbed too high especially for students. This led to a discussion about the tour day and banquet provided to all registrants with the result that the conference is not making a large profit even with the higher fees.

### c) Publications – Elena Fernández

#### i) International Abstracts in Operations Research (IAOR) – Preston White, Editor

After discussing the editorial transition from David Smith, P. White presented the new look of the publication cover, layout improvements and the push to get back on schedule before the end of 2011. He requested support from the representatives to help with the development of metrics that demonstrate the additional lift OR professionals experience by using IAOR as their search engine instead of Google Scholar.

#### ii) International Transactions in Operational Research (ITOR) – Celso Ribeiro

C. Ribeiro discussed the special issues that were published and those currently scheduled, the number of submissions, and publication schedule. Acceptance rate of articles submitted is at 27% with all 2010 issues published on time. Results of the application for indexing by ISI (Institute for Scientific Information) are expected in September 2011.

#### d) Distinguished Lecturers (IDL) & Invited Tutorials (IIT) – Karla Hoffman

K. Hoffman reviewed the list of distinguished lecturers for 2010 and encouraged all regional conference organizers to host distinguished lectures. She announced the newly-launched IFORS Invited Tutorials (IIT) program which provides \$2000 honorarium for tutorials by outstanding scholars on the fundamentals of emerging OR technologies, application areas or teaching approaches. This program is ready for implementation this year, 2011.



#### e) Education Program – Horacio Yanasse

Standing in for Nair Abreu, H. Yanasse announced the appointment of Marcela Gonzalez as Chair of the Education Website Editorial Board. Current activity involves uploading and providing pointers to materials useful for teaching OR in various languages in the IFORS website. In addition, he discussed the Crash Course on OR – one of which has been held in Brazil in 2010 and another two is planned in 2011. He encouraged that more such courses be held, as they have been useful for people teaching math in high schools and those in their early years of graduation.

#### f) Developing Countries Committee

##### i) African School – Horacio Yanasse

Reporting for Hugo Scolnik, H. Yanasse reported on the African School in Operations Research, supported by IFORS and EURO, to be held in Porto-Novo, Benin in November 2011.

##### ii) 2011 IFORS Prize for OR in Development - Elise del Rosario

E. del Rosario reported that 24 highly-qualified papers were received for the competition. The prize money was increased and the requirement that authors must be nationals of developing countries was removed. The winners will be announced during the conference banquet.

#### g) Website and Newsletter - Elise del Rosario

E. del Rosario reported on the website and the new features since its launch in 2007. The IFORS newsletters and tutorials have been integrated into the website and an easy to use online voting feature was added. In the Educational Resources area, links have been provided for resources useful for teaching OR. A wiki facility has been put in place to enable uploads of materials in several languages. She announced that development is underway for the Developing Countries Website.

E. del Rosario reported that the quarterly newsletter is published electronically through the IFORS website. The June issue contains the annual report from the Administrative Committee and the representatives are encouraged to disseminate this information to the members of their national societies. IFORS News correspondents have been appointed from the regional groupings and an ISSN has been secured for the electronic newsletter.

#### h) Regional Reports:

**ALIO** - H. Yanasse, on behalf of N. Abreu, reported that the ELAVIO 2012, the 16th Summer School of ALIO, will be held in Bento Gonçalves, Brazil on February, 6-10, 2012, and will be chaired by Luciana Buriol, (Federal University of Rio Grande do Sul). He also announced that the regional ALIO meeting, the CLAIO 2012, will be held in Rio de Janeiro, Brazil from September 24 to 28, 2012 will commemorate the 70th birthday of Nelson Maculan, Andrés Weintraub, and Hugo Scolnik.

**APORS** - E. del Rosario, reporting for Xiang-Sun Zhang, reported that APORS has 11 member societies and its current President is Yaxiang Yuan of the ORSC (China). She reminded the representatives to cast their on-line votes on the application for IFORS membership of the Operational Research Society of Nepal due on November 5, 2011. The next APORS regional conference will be held in Xi'an China in 2012. The Asia-Pacific Journal of Operational Research is the official journal of APORS.

**EURO** - E. Fernández reported that EURO has 30 national member societies with Grazia Speranza as current President. EURO conference in 2012 will be held in Vilnius and EURO/INFORMS conference in 2013 will be held in Rome. She reported on the various working groups, workshops, and awards sponsored by EURO. The next Summer/Winter Institute ESI 2012 will focus on Maritime Logistics and will be held in Bremen, Germany in June. The organizer is Christian Bierwirth. EURO also announced the launch of its three new journals.

**NORAM** - K. Hoffman reported on the activities of both the Canadian OR Society (CORS) and Institute for Operations Research/Management Science (INFORMS) which comprise the NORAM. CORS has a quarterly bulletin and a journal on Information Systems and OR. The 2011 annual CORS/SCRO meeting took place in St. John's, the provincial capital of Newfoundland and Labrador last May 30 to June 1, 2011. In addition, CORS sponsored the INFORMS Healthcare conference in June 2011 in Montreal. The 2012 CORS conference will be held in Niagara Falls, Ontario. CORS also presented several awards for merit, service, and practice for 2010.

INFORMS held several conferences: jointly with ALIO in Buenos Aires in June 2010 and the annual conference in Austin, Texas. The 2012 INFORMS annual conference will be held in Charlotte, NC in November while in June, a joint conference with ORSC is planned in Beijing. She reported on the many awards, publications, and active communities within INFORMS.

#### i) Proposal of the Nominating Committee - Elise del Rosario

E. del Rosario, reporting on behalf of the last three living IFORS Presidents, announced the Nominating Committee's decision to put forth the following names for the 2013 – 2105 terms of office:


i) IFORS President: Nelson Maculan, Brazil

ii) IFORS Vice President at Large: Sue Merchant, United Kingdom

#### 4) Open Forum

A question was raised regarding the IFORS activities to promote the practice of OR. It was suggested that at each conference, a practice stream be organized. It was also mentioned that a one-day conference fee for local practitioners only should be evaluated. Another suggestion included a special registration fee be available for delegates from developing countries and to set up an award program to support the attendance of a few young delegates from developing countries.

#### 5) Adjournment

The meeting was adjourned at 6:30 pm. 

#### ATTENDANCE

Name	Country
Mary Magrogan, AC	USA
Dominique de Werra, AC	Switzerland
Elise del Rosario, AC	Philippines
Yaxiang Yuan	China
James Cochran	USA
Mariana Funes	Argentina
Erick Moreno-Centeno	Mexico
Bjorn Nygreen	Norway
Hans Ittman	South Africa
Suleyman Ozekici	Turkey
Jeff Griffiths	UK
Jo Smedley	UK
Ben Lev	USA
Ron Askin	USA
Ilias Mamat	Malaysia
Baikunth Nath	Australia
Jozsef Temesi	Hungary
Richard Eglese	UK
Juan Jose Salazar	Spain
Barrett Thomas	USA
Bernard Fortz	Belgium
Stefan Voss	Germany
Jae H. Min	Korea
Degang Liu	China
Loo Hay Lee	Singapore
Andrew Mason	New Zealand
Jaroslav Ramik	Czech Republic
Marino Widmer	Switzerland
Elena Fernandez, AC	Spain
Horacio Hideki Yanasse	Brazil
Peter Bell, AC	Canada
Michel Gendreau	Canada
Louis-Martin Rousseau	Canada
Ariela Sofer	USA
Lidija Zadnik	Slovenia
Karla Hoffman, AC	USA
Celso Ribeiro, Editor	Brazil
Preston White, Editor	USA
John Ranyard	UK

