IFORS NEWS
International Federation of Operational Research Societies

Volume 8
Number 4
December 2014

ISSN 2223-4373

From the President

Happy New Year!

On behalf of the IFORS Administrative Committee, I would like to greet you all a Happy New Year!

The start of a new year is the traditional time to take stock of what we have accomplished and plan for what we will keep on doing and will do differently to achieve our goals.

As IFORS looks back at 2014, it can be proud of its accomplishments and efforts towards a more united international OR community. I consider myself fortunate for being with a capable team in the AC who has put in place programs that will help our Operations Research discipline. I would also like to take this opportunity to thank Peter Bell who turns over the finances of the organization into another set of capable hands. Please join me in welcoming Richard Hartl as the new IFORS Treasurer!

May we continue to be blessed with and be thankful for the people who have given their time and talent to help spread OR!

Nelson Maculan <maculan@cos.ufrj.br>

From the Editor

Farewell 2014

As President Maculan says, it is indeed the time of the year to assess what we have achieved. IFORS Barcelona comes to mind and our **Feature** articles remind us of its two sessions dealing with our history and practice.

Things are looking up for OR practice as one reads the **OR Impact** feature on how OR has transformed customer relationship management in a utility company. Apart from big industry, charities can soon also expect OR services from volunteers! National societies interested to adopt this initiative are referred to the **Tutorial.**

Meanwhile, other societies and organizations in China, Croatia, Germany, Korea, Philippines, Turkey and Ukraine have organized **Conferences**, and reading further about the regional conference of the Latin American societies (CLAIO) and the INFORMS meeting certainly gives one the warm feeling of belonging to a truly international community.

CLAIO was held in Mexico, organized by the Mexican OR Society, which just joined IFORS. Get to know more about it in our **OR Society in Focus**. The newest national OR society to join IFORS in 2014 is the national OR society of Tunisia. Our congratulations to both of them! It is interesting to note that even before Tunisia became an official IFORS member, it had already hosted ICORD Workshop (Djerba, 2012) and that Mexico will host the ICORD Workshop of 2016.

ICORD 2015, in the meantime, will visit Sri Lanka as you will read in our **OR for Development** section. The section also covers the workshop being organized by the EURO Working Group on OR for Development, to be held before the EURO 2015 in Glasgow.

In his **Editorial**, outgoing IFORS Treasurer Peter Bell brings up a thought-provoking issue concerning Analytics, even as he looks back (we hope with fondness!) at his many years with IFORS. Yes, the future may be full of uncertainty, as we read in the piece featured in this issue, but risks are reduced as you put capable people in key positions. This we have done, and we all welcome Richard Hartl, the new IFORS Treasurer!

As we go over the last quarter highlights in this issue, it is gratifying to think of how the collective efforts of the international OR community has brought forth a fruitful 2014, to which we bid a fond farewell.

Elise del Rosario <elise.del.rosario@stepforward.ph>

What's Inside:

Editorial

The Future of IFORS (with or without Analytics)

Peter C. Bell <pbell@ivey.uwo.ca>

IFORS, the federation of the national operational research (OR) societies, has prospered recently. New national societies have joined IFORS, and additional societies are in the process of applying or being approved as members. The recent IFORS triennial conference in Barcelona was the best attended IFORS conference ever, by a wide margin, while the next conference in Quebec City (2017) appears to be heading in the same direction. The IFORS journals (IAOR and ITOR) are doing well (although there may be some long-term issues concerning IAOR) and IFORS programs, particularly the IFORS Distinguished Lecture (IDL) and the IFORS Tutorial Lecture (ITL) have been well received. IFORS also supports a variety of smaller conferences and activities, particularly those in developing countries, and has the resources to expand these activities.

Surrounded by these successes, it is comfortable to conclude that IFORS is set fair for the next decade, but our field is going through major changes that require IFORS member societies and IFORS itself to address some important strategic decisions. The most obvious driver of these major changes in the rise of "analytics" or "data science" (hereafter referred to as "analytics").

IFORS exists to promote *operational research:* Article 1 of the IFORS statutes spells this out very clearly:

"ARTICLE I. Objectives
The objectives of the Federation shall be to develop operational research as a unified science and to advance it in all the nations of the world. Means to this end shall include:

1. Sponsoring international meetings.
2. Providing other means for exchanging information on operational research.
3. Encouraging nations to establish operational research societies.
4. Supporting standards of competence in operational research.
5. Promoting operational research education.
6. Promoting the growth of both existing and new fields of operational research."

The major strategic choice facing the IFORS member societies and IFORS itself is whether to embrace the "analytics" movement or to ignore it.

This is not the forum to discuss the definitions of *operational research* or analytics but most people engaged in either of these fields recognize that there is a great deal of overlap between them.

This high degree of commonality presents both an opportunity and a problem for OR. The opportunity arises from the fact that "analytics" markets really well in industry: firms that would never have dreamed of forming an "OR group" have jumped into analytics and the demand for analytics workers has exploded. There appear to be perhaps 100,000 vacant positions in data scientists/analytics in North America. The opportunity for the IFORS member societies is that if they can find a way to capture a significant portion of the analytics community, they look set for an expansive and prosperous future. The inverse of this opportunity illustrates the problem for OR: the long term future for the name "OR practitioner" appears bleak with the title being replaced by "data scientist" or "business analyst" or some similar term that does not require explanation to a management audience. If our national OR societies restrict their attention to academics and "OR practitioners", they are likely to become more and more academic over the long term as analytics groups and practitioners identify less and less with OR.

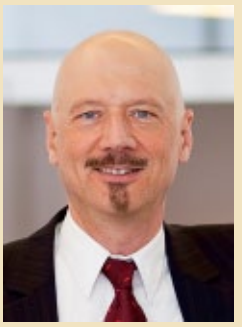
The major strategic choice facing the IFORS member societies and IFORS itself is whether to embrace the "analytics" movement or to ignore it. INFORMS, the U.S.A. IFORS member society, has already faced this decision and elected to embrace analytics and chase the analytics practitioner. Steps INFORMS has taken include forming an "Analytics" section that has grown very rapidly and now offers a whole portfolio of activities aimed at the practitioner, initiation the Certified Analytics Professional (CAP) credential where INFORMS now certifies analysts as approved to practice (recently the CAP credential was named as the most important certification for data scientists by CIO Magazine (http://www.cio.com/article/2457266/certifications/160612-11-Big-Data-Certifications-That-Will-Pay-Off.html), and rebranding the INFORMS OR Practice Conference as the "INFORMS Conference on Business Analytics and Operations Research". The results so far have been very promising: there is a new energy and vitality at INFORMS with solid expansion of all the analytics centered activities.

The expansion of analytics has been accompanied by a new phenomenon, not dreamed of when IFORS was formed in the 1950s: that of offshoring analytics. Perhaps partly as a result of the difficulty in hiring analytics professionals in North America and Western Europe, several global analytics corporate powerhouses have appeared. Firms such as GENPACT, Cognizant and Mu Sigma now employ thousands of "OR practitioners" providing "OR" services to global corporations worldwide from their main bases in India supported by analyst groups in Eastern Europe (particularly Hungary) and worldwide. Companies such as GE, Wal-Mart, Allstate, Hewlett Packard, Goldman Saks, HSBC, Citibank and Royal Bank of Scotland now buy some or all of their analytics from offshore suppliers. Other firms, such as Dell and IBM, have set up 'captive' analytics groups offshore (Dell Global Analytics is in Bangalore, India, IBM Research in China) providing analytics services for the global corporation. The motivation for this shift in the center of gravity of world OR appears to be as much the mathematical and scientific level of public education as economic issues. Consequently this trend looks likely to continue so that there will soon be (if there are not already) more people doing OR outside North America and Western Europe than there are within these traditional centers.

Statistics on the membership of the IFORS member societies do not reflect this major change in the geography of OR. In fact, there is little evidence that the IFORS member societies have grown much alongside the growth in analytics, except perhaps for INFORMS that has seen some additional membership. Any effort to capture the growth of analytics will be most effective originating regionally, that is through the IFORS member societies, so this presents an opportunity for IFORS to promote a strategic discussion of the opportunity that analytics presents for the National OR societies. Clearly not all "analytics" is "OR" but the more advanced analytics community appears to have a natural home within our OR societies. Appealing to this community requires outreach but also, perhaps, some changes to our societies to make those who identify with analytics feel welcome and see value from membership. Perhaps it also requires a redrafting of IFORS Article 1: Objectives?

Encouraging national societies to embrace the advanced analytics community could be a game changer for IFORS and OR leading to a period of enhanced growth and prosperity. While predicting the future is hard, it does appear that national societies that ignore the analytics community are destined for a limited future focused largely on university academics and academic OR departments. Since IFORS will prosper if its member societies prosper, the challenge facing IFORS is to balance a loyalty to IFORS historical roots in operational research with the need to embrace the ever changing nature of the practice of OR, whatever that ends up being labelled.

IFORS Welcomes New Treasurer



The year 2015 marks the beginning of the term of the new IFORS Treasurer, Richard Hartl. A quick look at the achievements of Richard Hartl gives one the impression that he excels in whatever he sets out to do.

How many professors have you met who topped the German, Austrian and Swiss professors in Production, Transportation, and Operations Management? Well, he did this in the 2012 German Handelsblatt research ranking of 2100 professors in Business Administration. Just this year, he received the main teaching award of the University of Vienna, where he has been full professor since1995,

Passionate about doing research, teaching, transferring knowledge to industry and rendering service to the community, he has successfully cooperated with companies and obtained research grants for both theoretical and applied research.

His research area in the application of OR methods in production, logistics, and transportation makes him the natural choice as associate editor of such top journals as Transportation Science. He is also Senior Extramural Fellow of the Center for Economic Research (CentER), University of Tilburg.

Among the positions he occupied include Head of the Department of Business Administration from 2005 to 2008 and from 1993 to 1995, vice dean in Magdeburg, Germany. In the OR community, he has served the Austrian Society for OR (OEGOR) as Treasurer from 1983 to 1988 and as President from 1999 to 2003.

With such credentialed Treasurer, IFORS can look forward to excellent management of its finances!

Dealing with Risks and Uncertainties

Prof. Dr. Ulrike Reisach <ulrike.reisach@hs-neu-ulm.de>**, October 2014**

Operational Research (OR) is used to address some of the most important problems of mankind such as climate change, public health, energy and nutrition supply. However, less predictable events that have a far-reaching impact such as natural disasters (earthquakes, volcano eruptions or tsunamis), pandemics and political conflicts which result in trade sanctions and embargoes, restrictions for companies and, worst of all, in wars, call for more than the simple extrapolation of our existing predictions and models.

What support does OR provide in dealing with such issues? Can we adequately consider them in our models? Can we help decision makers to reach better decisions? Do the results of the decisions and actions taken create positive outcomes for human beings involved now and in the future? Taleb (2007: 140) provocatively warns us that, "we overestimate what we know and underestimate uncertainty, by compressing the range of possible uncertain states."

"we overestimate what we know and underestimate uncertainty, by compressing the range of possible uncertain states."

In the face of disruptive changes and increasing risks for international policies and businesses, we have to get engaged in inter-disciplinary research designs that address the multifaceted aspects of most societal issues. It requires experience in social science research to address the complexity of the given situation and to integrate multiple stakeholders and disciplines. It requires courage to admit that several complex problems may not have an OR solution and to openly address the potential long-term impact of any action. It requires creativity to develop meaningful alternatives in problem definition, process design and actions. It requires critical self-reflection to address ethical issues at all stages of the OR process.

Corporate foresight

Corporate foresight and issues management help to identify megatrends and anticipate future developments in order to shape the future rather than being forced to react to external changes.

Most companies are familiar with technology trends in their respective fields of activities. In a new, more society-oriented approach, changes in the business world are looked at as catalysts for innovation. Thus, megatrends in the political, legal and societal areas of any business, e.g., new rules or players in trade policy, shrinking government budgets as well as growing social differences/disparities and the societal changes that go with them, are noted and studied.

A megatrend can be interpreted as a global development that has a direct or indirect effect on the lives of a majority of people for the coming 10 years. Trends like demographic change, urbanization, migration, climate change and industry 4.0 have the potential to change markets, businesses, and global economic balance. Global challenges affect customers just as they affect the company's business, business partners, competitors, suppliers, employees as well as the public policies and societies in the world. Megatrends such as the scarcity of natural resources, climate change and the long-term development of emerging markets, come with a high probability of occurrence and can thus be predicted with greater accuracy. But the business environment of each country comprises interwoven factors such as political and economic stability and governance, including legal security, infrastructure, the state budget, education and health care. Data on population growth, education and unemployment provide good indicators of a society's inner stability and the risks of a country's domestic conflicts or conflicts with neighbors.

The focus of corporate foresight lies in the evaluation of

- Future trends, turning points, extraordinary events (wild cards) and related business opportunities,
- Probabilities of scenarios and consequences for the company's business,
- Strategy development and shaping the business environment.

Companies do much to systematize the process of corporate foresight. They identify trends that have a high likelihood of happening or have a strong influence on society. Closely cooperating with the world's leading think tanks, strategy departments of big global players provide information and data about these megatrends and challenges. Global Procurement and Sourcing as well as Corporate Communications and Government Affairs units serve as early warning units of regional economic and political developments, media news and sensitivities of governments and the public. Strategic focus projects are then singled out after a detailed impact analysis, from which they conduct scenarios and workshops. Scenario techniques are a method to clarify the interplay of the individual trend factors and their possible effects as well as to formulate a strategic response.

Companies are mostly aware of the limitations of their models, but they use them in order to better understand the complexity and interplay of the individual factors. This internal learning effect is one of the major achievements for decision makers in the strategic research process. It makes sure that company units do not stick to a backward-looking plan and budget, but are rather focused on innovation and future needs of their customers. Megatrends therefore act as catalysts for innovation, for new business models, new target groups and collaboration with new partners and new service offerings.

Decision-Making with Uncertainty

Uncertainty stems first from the unpredictability of nature. Governments install early warning systems for natural disasters such as tsunamis, earthquakes or volcano eruptions. However, they can only tell where there is a high probability, and are not able to give exact details on when and how the next big disaster will happen. Insurance companies have very sophisticated research models to find out which regions are more prone to disasters than others and include those forecasts into their pricing schemes. OR also provides models for disaster relief and efficient rescue logistics. But so far, there is no way to accurately predict such events.

Similarly difficult to predict are areas that depend on human behavior. A most current example is the Ebola crisis: States that struggle with unfavorable conditions and a lack of money, infrastructure and education are hardly able to master such challenges. As Fukuyama says, "regimes which are failing in providing the essentials of good governance such as security, infrastructure, health and rule of law lay the foundations for violent developments and warlord regimes".

But there are also problems of growing social disparities in industrialized countries. What will be the consequences if citizens and migrants are suffering from unemployment and lack of opportunities for long periods of time? Another source of uncertainty are potential cases of severe cybercrime, infrastructure (i.e. electricity grid) collapse or terrorist attacks. Political decisions that are taken as precaution or counteraction are new laws, new surveillance methods or reporting requirements and trade sanctions/embargoes – measures that usually make business more costly and complicated. In a worst case scenario companies might even be exposed to travel and/or Internet accessibility/usage restrictions, for limited or bigger periods of time and regions. What we take for granted right now might not be available eternally and like in countries with an unstable energy supply, we should have reserve batteries or other substitutes for the technologies we depend on so crucially.

Political, economic and social factors are inextricably woven together in a complex network. Serious prognoses on such kinds of issues are hardly feasible with so many variables and so many different players pursuing so many different goals. Nonetheless, economics and politics are areas in which decisions must be made under conditions of extreme uncertainty. But all models trying to forecast economic and political developments work with assumptions. The scenario that is most attractive for politicians is an optimistic one; the same is true for publicly listed companies that need to please investors. But neither an extrapolation of past data and experiences nor an optimistic approach is able to prepare us adequately for the worst case. The biggest market dislocations are caused by factors that are not attributable to trend-extrapolation but rather show up more under the header of "wild cards": natural disasters, pandemics or wars. Following Taleb (2007: 213) we should integrate such "wild cards" in our OR models in order to be prepared for events which are outside perceived possibilities yet extremely forceful when they happen.

In times of global interconnection each small political action or signal communicated via mass media can lead to much bigger consequences that impact further societal groups or regions. Frequently, there are psychological domino effects, such as those well-known examples from the stock market, which could, to some extent, also be applied to several societal developments. Behavioral economics, for which Vernon L. Smith and Daniel Kahnemann were awarded the Nobel Prize in economics in 2002, has contributed much to the understanding of this phenomenon. While making clear how much we are subject to biases and blunders, it warns against simplistic backward-looking heuristics. Decision-making has to be aware of those shortcomings, use several scenarios and double-check them with different experts and stakeholder groups to avoid unintentional biases, eco-chambers or other forms of one-sidedness or blind spots. But integrating different views also means that those decisions are group decisions, with all their implicit and explicit wishes and fears, unstable preferences and reassurance loops with diverse societal groups, knowledge/expertise ascriptions, power games, emotionality and mutual influences during the communication and interaction process - subjects which are to be deeply researched in Behavioral OR.

Conclusion

Foresight challenges the old ways of thinking and doing things and helps find untapped resources and opportunities. At the same time, it gives early warning of potential risks. Risk scenarios have to be an inherent part of every planning process. They can be the "stress test" for political and economic decisions and prove the robustness of a policy or business model in difficult times.

More and more, researchers in companies, universities and think tanks have to be in constant dialogue about future challenges and integrate all societal groups: the public, media, government and non-governmental organizations, politicians, unions, associations. Their expertise can contribute to dealing with some of the current challenges.

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30+ Years With IFORS

Peter C. Bell <pbell@ivey.uwo.ca>

I first encountered IFORS when I attended the 1978 Triennial Conference in Toronto. This conference was very influential on my career: In addition to learning about IFORS, I heard Harold Larnder's famous talk on the origins of Operational Research (Larnder, H. "The Origin of Operational Research", in Haley, K.B. (Ed.), Operational Research'78, North-Holland Publishing Company, Amsterdam, 1979.), and I ran into and spent time with Robert Hurrion and his research group that was using dynamic computer graphics to illustrate the transient output of simulation models. At the time I was looking to align my research more closely to the strategy of a globally ranked business school that targeted C-level managers and decided that interactive computer graphics and simulation could appeal to this audience. This research stream was to occupy my research time for most of the next ten years.

Following my term (1985-86) as President of the Canadian Operational Research Society (CORS/SCRO), I was appointed CORS/SCRO representative to IFORS and this morphed into North American Vice-President when CORS/SCRO's turn to fill this post came in 1989. I was fortunate to serve on this IFORS Administrative Committee lead by President Bill Pierskalla and Treasurer David Schrady. At the start of Bill's term, IFORS functioned on a shoestring with IFORS secretary Helle Welling somehow making the profits from the last conference last until the next one. Bill and David decided that IFORS needed more revenue items and so a strategy was launched to improve journal and conference revenues in part by adding new conferences and new journals. My role was to start and edit a new journal (International Transactions in Operational Research) and to act as program chair for the IFORS Special Interest Conference on Multimedia/Digital Technologies: OR in Strategy and Operations Support held in Santa Monica, California (where US President Bill Clinton stayed in the conference hotel during our event and my wife had a very pleasant conversation with Barbra Streisand in the lobby of the hotel!)

After retiring from the Vice-President post, I was appointed General Editor of IFORS publications and served in this role until 1995 when I was elected IFORS President. The IFORS of 1995 was quite different from that of 1989 in that there was some money in the bank.

The highlight of my Presidency was the 1997 Triennial conference in Vancouver where we were met by wonderful weather, which can be rare in Vancouver. Most attendees remember the trip up the coast on the steam train followed by the open air lumberjack show and barbeque in the countryside outside Squamish on a beautiful sunny day. What most people never knew is that we had no wet weather option!

After serving the usual term as past President, my IFORS career appeared to end in 2000 after several trips to China with new President Andres Weintraub helping to organize the 1999 Conference in Beijing.

IFORS was very ably served by Treasurers David Schrady and then Hugh Bradley whose term expired at the end of 2006. When President Tom Magnanti asked me about the position of Treasurer, I offered to take this job, having very fond memories of the people I had worked with and met during my earlier IFORS involvement. The last eight years have been a period of steady growth and the launch of a number of successful new initiatives with IFORS ably lead by Presidents Tom Magnanti, Elise del Rosario, Dominique De Werra and Nelson Maculan.

As my term ends at the end of this year, IFORS is strong financially and has the opportunity to move forward and play an increasingly influential role in the development of operational research from its unique global perspective. I wish IFORS and all those who elect to become involved with IFORS and IFORS activities, the very best of success.

Dr. Subhash C. Narula

December 17, 1943 - September 11, 2013

Human Being / Student of Life / Educator / Friend

by Cathal Brugha <cathal.brugha@ucd.ie>

Subhash Narula who died recently was a renowned scholar in the fields of locational analysis, multi-criteria analysis and statistics. Subhash spent the majority of his career as a member of the faculty of the School of Business of Virginia Commonwealth University (VCU), USA. But for us in the IFORS community who sadly regret his passing he was a great soul, who reached out to others, remembering birthdays and amusing children with his balloon animals. Our children were very sad when they heard of his death. The following tribute by his partner of many years Marigail Jury describes him perfectly.

"Remembering the life of this very special person reminds us of the Lamplighter whose job it was to go along the dark night streets and light the gas lamps one by one. As the Lamplighter came near, his lighted tapir dispelled the dark shadows. He would light each lamp and continue on his journey. When the Lamplighter was no longer there, you could see where he had been.

Dr. Narula was a deeply compassionate and caring man. The laugh or cry of a child, the sight of a disabled or elderly person immediately caught his attention and a bond would form between him and those for whom life was hard. Usually a radiant smile was the first sign of his touch.

Although he was an educator, Dr. Narula was a student of life; with each lesson he learned, he had the gift of sharing it with others in a way that encouraged others to think for themselves and become better people in the process. For those of us who knew and loved him personally, the void cannot be filled. But the lamp that he lit in our hearts will continue to burn brightly. May God bless his Soul."

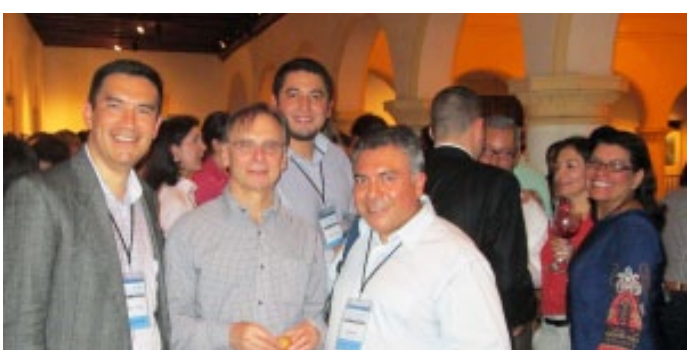
CONFERENCES

CLAIO Monterrey 2014: A Fiesta for the Mind and the Senses

José Luis González Velarde <gonzalez.velarde@itesm.mx>, **Roger Z. Ríos-Mercado** <roger.rios@uanl.edu.mx>

Meeting every other year, the Latin Iberian American OR community (ALIO) got together again last October 6 to 10 for the XVII Latin-Iberian-American Conference on Operations Research (CLAIO) in Monterrey, Mexico. It was held jointly with the 3rd Annual Meeting of the Mexican Society of Operations Research (CSMIO).

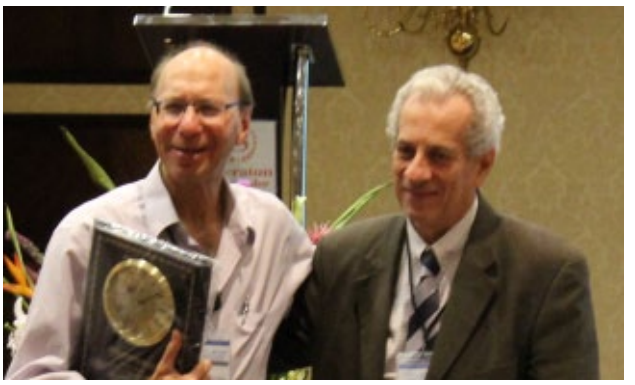
SMIO Distinguished Keynote speaker *Carlos Coello* from CINVESTAV-IPN, Mexico opened the conference with his informative talk on recent advances of evolutionary algorithms for multi-objective optimization problems. The welcome cocktail reception was held at the Metropolitan Museum, where beer and wine flowed freely, and an *hors d'oeuvre* selection of fine Mexican delicacies was served to everyone's enjoyment.



Roger Rios, Jonathan Bard, Fernando Camacho, Romeo Sanchez, and Laura Plazola enjoying the cocktails at the welcome reception.

Plenary speakers included *Jonathan Bard* (University of Texas at Austin, USA), who spoke on planning and scheduling for healthcare workers, *Héctor Cancela* (Universidad de la República, Uruguay), who gave a talk on rare event simulation, and *Elena Fernández* (Universitat Politècnica de Catalunya, Spain) President-elect of EURO, who gave the closing plenary talk on location-routing on simple and not so simple graphs.

The IFORS Distinguished Lecturer, *Sheldon Ross* (University of Southern California, USA) gave a talk on variations on the stochastic assignment problem. He was bestowed the IDL award by IFORS President, *Nelson Maculan*, after his talk. Tutorials given by academic leaders such as *Andrés Weintraub* (Universidad de Chile), *Ignacio Grossmann* (Carnegie-Mellon University), *José Holguín* (Rensselaer Polytechnic Institute), *Paolo Toth* (Università di Bolgna), and *Rubén Ruiz* (Universitat Politècnica de Valencia) were very well appreciated by the participants. Students took the opportunity to learn from the experts during the short courses covering basic aspects of many operations research topics given by *Angélica Lozano* (Universidad Nacional Autónoma de México), *Cristina Gígola* (Instituto Teconlógico Autónomo de México), *Eduardo Fernández* (Universidad Autónoma de Sinaloa), and *Juan Díaz* (Universidad de Las Américas).



Sheldon M. Ross receives the IDL award from IFORS President Nelson Maculan during the conference

Of the 400 submissions received, 95 were full papers and 310 were abstracts coming from 19 different countries. The rigorous review process resulted in 241 registered works. Of the 424 registered participants: 244 (58%) were from Mexico; 51 (12%) from Brazil; 36 (8%) from each of Chile and Colombia; 13 (3%) from USA; 8 from Peru; 6 from Argentina; 5 from Spain; 4 from Ecuador; 3 from each of Cuba and Uruguay; 2 from each of France, Italy, Poland, and Serbia; and 1 from each of Canada, Greece, Portugal, Turkey, UK, and Venezuela. These figures include 100 students sponsored by the Mexican Council for Science and Technology (CONACYT) and 3 toddlers sponsored by SMIO laying the foundations for future generations. As in previous CLAIOs, authors of the works presented at the conference were invited to submit full papers to a special edition of *Annals of Operations Research*.

Alongside the joint ALIO-SMIO meeting were two satellite events, the 7th Meeting of the Iberian-American Network on Multi-Criteria Decision Analysis (RED-M) and a cluster session on Soft Computing and Hybrid Systems organized by the Eureka International Network. Several special events were also held during the conference. During the ALIO business meeting, José Luis González Velarde of Mexico, Co-chair of CLAIO, was elected as the new ALIO President for 2014 -2016. Other elected officers include: Héctor Cancela (Uruguay) - Vice President, Rosiane de Freitas (Brazil) - Vice President for Events, and Jorge Vera (Chile) - Secretary. Lorena Pradenas (Chile) continues as IFORS VP for ALIO since she was elected for three years in CLAIO 2012. The following CLAIO would be held in Santiago Chile in 2016 and in Peru in 2018. In the SMIO business meeting, Roger Ríos-Mercado, Co-chair of CLAIO, was elected as the new SMIO President for 2014-2016.

The Conference Gala Banquet was held Thursday night at El Rey del Cabrito, one of the most celebrated restaurants in Monterrey where the typical trademark regional dish was served. All the participants had a very pleasant Mexican dinner enjoying the live entertainment provided by the Fara-Fara (northern musical group) and the classical Mariachi. Everyone, including the respected members of ALIO, could not help but let their hair down as they sang along and danced to the music of these sensational folk bands. The combined effect of the Mexican ambiance and beer caused pictures of people in the last bus from the restaurant back to the hotel to be censored!

INFORMS Annual Meeting Sets Record in Attendance, Excitement

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SAN FRANCISCO 2014
INFORMS ANNUAL MEETING
BRIDGING DATA AND DECISIONS

The INFORMS annual meeting held in San Francisco from November 9 to 12 at the Hilton San Francisco exceeded all previous attendance records. Bringing together over 5,800 OR & Analytics academics and practitioners, the meeting had nearly 5,000 papers in 1,351 sessions, the largest ever career fair with over 100 employers, numerous subdivision meetings and opportunities for networking http://meetings2.informs.org/sanfrancisco2014/.

The enthusiasm was strong with many attendees noting the excitement and energy throughout the meeting. According to blogger Thiago Serra, "I came to San Francisco aiming to know what is going on in the field. In most part, I have tried to stretch the boundaries of what is in my comfort zone. The result has been awesome: I got aware of many interesting research work going on, of great people behind them, and also got some interesting notes for my own research agenda."

The conference chair was Candace Yano of the University of California Berkeley. She and her committee put together a fantastic meeting and program including numerous luminaries.

Nelson Maculan giving award to Lyn Thomas

Stanford's Alvin E. Roth, a Nobel Prize winner in Economics, spoke about Market Design and the Economist as Engineer. MIT's Dimitris Bertsimas presented the Philip McCord Morse Lecture, "Statistics and Machine Learning via a Modern Optimization Lens."

Lyn Thomas of the University of Southampton presented the IFORS Distinguished Lecture, "Credit Where Credit is Due: Lessons for O.R. Modelling from the Global Financial." http://ifors.org/web/lyn-c-thomas/. IFORS President Nelson Maculan presented Thomas the IDL award.

INFORMS 2014 President Stephen M. Robinson with INFORMS Executive Director Melissa Moore (right)

Blogger Tengjiao Xiao observed, "The IFORS Distinguished Lecture was … both insightful and interesting. Dr. Thomas first introduced the history of credit scoring, which uses operations research and statistical models to assess default risk, for consumer lending. The fact that San Francisco is the birth place of credit scoring is a happy coincidence."

As it does every year, INFORMS recognized its members' best achievements at an award ceremony. INFORMS 2014 President Stephen M. Robinson of the University of Wisconsin was the MC.

This year's winner of the John von Neumann Theory Prize was Nimrod Meggido of IBM for his work on linear programming, in particular his groundbreaking probabilistic analysis of the Simplex method. Terry P. Harrison of Pennsylvania State University won the association's George E. Kimball Medal for distinguished service and András Prékopa of Rutgers University won the INFORMS President's Award. [See video of the INFORMS President's Award at https://www.youtube.com/watch?v=JNl7m5tdKq0 or on INFORMS YouTube station at https://www.youtube.com/user/INFORMSonline]

The conference was a boon for students getting their first exposure to a scholarly conference, and those destined for notable careers. Irish-born Eoin O'Mahony of Cornell University won the Doing Good with Good OR Student Paper Competition for his work on behalf of New York City's bicycle sharing program. Blogger David Morrison observed, "Eoin applies a number of optimization techniques to solve this problem that will be very familiar to anyone in OR…and to great effect: in an article published in Science, Michael Pellegrino, the director of operations for the New York City bikeshare system, says that this work provides the 'overarching vision for how we like our system to look.'"

Also for the record books was the 50th anniversary of decision analysis, celebrated by the association's Decision Analysis Society with two of the field's original thinkers, Ron Howard of Stanford and Howard Raiffa of Harvard University. More than 300 decision scientists joined in a day reflecting on the history and the future of Decision Analysis. In addition to sponsoring workshops, DAS presented its first Raiffa-Howard Decision Quality Award to Chevron for its unique and long term commitment to making decision quality an organizational competency.

The new INFORMS Analytics Maturity Model (see an article in the June, 2014 issue of the IFORS News) had its official launch at the annual meeting. The model allows analytics experts and operations researchers at companies and government agencies to do a self-assessment of how well the organizations use analytics. As the leading professional association for analytics and OR professionals, the annual meeting also included the opportunity to sit for the INFORMS Certified Analytics Professional (CAP) exam and attend specialized continuing education courses: "Foundations of Modern Predictive Analytics"' and "Data Exploration & Visualization." Information about CAP and these courses is available at https://www.informs.org/Certification-Continuing-Ed.

All in all, the meeting was one for the record books, a meeting that stayed in attendees' minds after it was over and beyond. As blogger Tarun Mohan Lal wrote on his departure, "While it's unbelievable that the three rich days of the conference are coming to an end, as I look back at all the things I learnt to take back to my organization, [it] feels like a year-long journey has just begun."

Croatian Conference Pays Tribute to Society Founder

15th International Conference on Operational Research KOI 2014 Osijek, Croatia

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The Croatian Operational Research Society http://www.hdoi.hr (CRORS) held its 15th International Conference on Operational Research (KOI 2014) http://www.hdoi.hr/koi2014 in Osijek on September 24 to 26, 2014. A major event organized by CRORS since 1991, this year's celebration not only marked the biggest conference attendance, but also included a section dedicated to the research interests of one of the founders and the first president of CRORS, **Luka Neralic**, who celebrated his 70th birthday.

Participants of the KOI 2014 conference gather in front of the Faculty of Economics in Osijek, Croatia

Abstracts by 209 authors from 31 countries were received. From these, 95 papers were presented in eight sections, namely: Invited papers; OR Theory and Applications; Mathematical Programming; Multicriteria Decision Making; Quantitative Methods in Banking and Finance; Statistics and Econometrics; Machine Learning; Data Mining and Analytics; and Special Section in Honor of Luka Neralic. The scientific program of this conference included invited lectures by James J. Cochran (University of Alabama, USA), Goran Lesaja (Georgia Southern University, USA), Ali Emrouznejad (Aston University, UK), Janez Povh (Faculty of Novo Mesto, Slovenia), and Amir Nakib (Universite of Paris est Creteil, France).

Two new awards were established during the conference, namely: the CRORS Best Young Researcher Paper Award (BYRPA) given to Tihana Skrinjaric from University of Zagreb, Faculty of Economics and Business; and >>

>> the CRORS Distinguished Service Award (DSA) given to professor Tihomir Hunjak (University of Zagreb, Faculty of Organization and Informatics Varazdin), a former president and one of the founders of CRORS.

KOI 2014 participants at the boat trip in Nature park "Kopacki rit", Croatia

The high quality technical presentations were complemented by the social events, which included a charming welcome reception at the boat-restaurant on the Drava river, and the conference excursion to Nature park „Kopacki rit" in Baranya where a boat trip, good wines at old wine cellars and the traditional Slavonian dinner with folk music left everyone in high spirits!

The abstracts of the papers presented at the conference were published in the "Book of Abstracts – KOI 2014", and the full papers had been sent for a double-blind review after the conference. Accepted papers will be published in the Croatian Operational Research Review journal which is indexed in Current Index to Statistics, EBSCO, EconLit, Inspec, Proquest, Mathematical Review, Zentrallblat fuer Mathematic, and other databases.

The conference was organized in collaboration with Faculty of Economics in Osijek and Department of Mathematics, University of Osijek. The program committee was headed by Rudolf Scitovski and the organizing committee, by Marijana Zekic-Susac. KOI conferences have grown in terms of number of participants since its start in 1991 and have been held throughout Croatia: Rab, Rovinj, Trogir, Pula, Split, and Zagreb. This is first time the conference was held in Osijek, in the north eastern part Croatia.

Special Session for Luka. One of the founders of CRORS, Luka was its first president from 1992 to 1996. He received his PhD from University of Zagreb, Croatia, where he has worked since 1967 and where he held a permanent position of Full Professor since 2002. For his special contribution to the development of the society and the area of operational research in Croatia and abroad, he received a CRORS Distinguished Service Award in 2013. He put long-term enthusiastic efforts in promoting operational research in the Croatian academic community by developing courses, seminars, conferences, and postgraduate programs in operational research. He also contributed to the inclusion and reputation of the CRORS in international professional organizations of EURO, IFORS, and INFORMS. In 2008 Luka Neralic received the Charter of Recognition for CRORS from Elise A. Del Rosario (IFORS President) in Sandton, South Africa. He has also established a close collaboration of CRORS with the Slovenian Society of Informatics' Section on Operations Research (SOR). He has numerous publications in well-known journals, has received a number of research grants, has chaired conferences and edited journals. His areas of research interest include Data Envelopment Analysis (DEA), linear programming, parametric programming, multi-objective programming, sensitivity, and stability analysis.

The Special Section in his honor featured fifteen papers given by: V. Charles, M. Khodabakhshi, S. Rashidi, M. Asgharian, L. Neralic, V. Boljuncic, Y. Li, H. Gao, L. Liang, W. Lu, L. Zadnik Stirn, J. Zerovnik, R. Sotirov, G. Lesaja, T. Peric, Z. Babic, S. Resic, R.E. Wendell, V. Cvetkoska, E. Naumovska, P. Fiala, J. Jablonsky, K. Kotarac, Z. Lukac, M. Gardijan, and T. Skrinjaric. S. Zlobec and V. Rupnik sent messages, while R. D. Banker, E. del Rosario, U. Leopold Wildburger, V. Cvetkoska, J. Skorin-Kapov, D. Skorin-Kapov, and R. E. Wendell sent videos.

James J. Cochran talks about TEC Workshop at the Opening session of KOI 2014

Teaching Effectiveness Colloquium (TEC). The workshop http://www.hdoi.hr/tec was organized in conjunction with the KOI 2014 conference with the aim of enhancing the quality of teaching OR courses at the university level. The workshop was given by James J. Cochran from University of Alabama, Jeffrey D. Camm and Michael J. Fry from University of Cincinnati, USA. A total of 68 participants attended the workshop; attendees were mainly young faculty members from Croatia, Slovenia, Czech Republic, Russia, Poland, and India, among others.

Michael J. Fry gives his lecture at TEC Croatia 2014

In his lecture on *Modeling for Insights*, Camm demonstrated how modeling can be used not only to create models, but to also gain insights into business problems and possible ways of solutions as well as to learn something new from alternative models of the same problems. Fry presented in *Excel-Based Tools for Teaching Analytics* a number of examples and provided hands-on tips on ways to teach students to effectively use the analytics tools provided as Excel add-ins, such as Solver and Risk Solver. In *Engaging and Re-Engaging Students with Active Learning,* Cochran demonstrated interesting examples of ways to get the attention of students, make students active participants in the class, and enhance their understanding through active learning. Participants especially liked examples presented during the workshops, and several said they will adopt them in their classrooms. TEC Chair Cochran parted with these words: *The tools of operations research are tremendously relevant and useful in the modern world. It is increasingly important that we efficiently use resources, and this is what we can accomplish through the tools of operations research. OR researchers are constantly finding new and novel ways to apply the discipline in business, engineering, and even the sciences*. The TEC has been previously organized by Cochran and various colleagues in the USA, Uruguay, South Africa, Colombia, Kenya, India, Argentina, and Cameroon.

Jeffrey D. Camm gives his lecture at TEC Croatia 2014

INFORMS President Special Guest at ORSC Meeting

Degang Liu <dliu@amt.ac.cn>

Everyone tries to make it to the traditional conference group picture.

The OR Society of China (ORSC) held its biannual national meeting on October 18 to 20 in Central China's Xuzhou. The occasion was made significant with the presence of IFORS VP for APORS Yaxiang Yuan, former IFORS VP Xiangsun Zhang, and INFORMS President Stephen Robinson. Nearly 400 participants from almost 100 Chinese universities and industries gathered in the ancient city of Xuzhou.

On the opening ceremony on October 18, ORSC president and vice president of Xuzhou Normal University welcomed all the participants, the six invited plenary speakers, and the 36 invited stream speakers. There were 12 thematic topics organized by the society's special interest groups on, among others: continuous and discrete optimization, scheduling, game theory, operational management, bioinformatics, graph and combinatorics, finance, management, and software design. The first plenary session was by INFORMS President Robinson on *Operations Research in a New Environment*. His talk addressed some new challenges and future research orientation facing the OR/MS community. Apart from the two-day presentations, ORSC presented its survey report on research developments in 2012-2013.

Yaxiang (right) presents the award for his OR contributions to Jiye Han

In the biannual meeting, ORSC awarded prizes to Jiye Han, distinguished researchers Bingsheng He (Nanjing University) and Liu Hong (HK City University), application project to Yindong Shen and her team (Huazhong University of Technology) on public transport optimization, and distinguished young researchers to Simai He (Shanghai University of Finance and Economics), Linyun Wu (Chinese Academy of Sciences), and Yi Yang (Zhejiang University).

Xuzhou, otherwise known as Pengcheng in ancient times, is a major city in Jiangsu province known for its role as a transportation hub in modern China. Historically, because of its strategic location, Xuzhou was the capital and trade center of ancient states and became a battle ground of many dynasties. In the last day for a social program, participants had the chance to taste a bit of Xuzhou's history with a visit to the Han tomb museum.

Revelations from Charlemagne's Medieval Capital

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Gerhard-Wilhelm Weber <gweber@metu.edu.tr>

This year's international conference of the *German Operations Research Society* (GOR) was held from September 2 to 5, 2014 in the historical city of Aachen and was hosted by the local *RWTH Aachen University* - one of Germany's top research universities (http://www.or2014.de/).

Some of the world's leading authorities in the field of Operations Research were on hand for the plenary talks. *Brenda Dietrich* from the IBM Watson Group dealt with cognitive computing in the era of big data sets; *Michael Trick* from Carnegie Mellon University in Pittsburgh presented some interesting applications of combinatorial and data mining techniques to scheduling problems arising in professional and college sports leagues; and *David Barber* from University College London gave an overview of some of the techniques involved in deep learning theory - a recently emerged branch of neural networks with many promising applications. Conference chair *Marco Lübbecke* did a good job of including the whole spectrum of topics from methodological such as combinatorial optimization, equilibrium problems, robust optimization or mixed-integer programming to applied ones such as revenue management, scheduling problems, smart electricity markets, auction theory, among others.

Traditionally selecting an emerging OR topic as a conference theme, the GOR committee chose *Business Analytics and Optimization* and answers to: How can we better exploit historical information to come up with better decisions that are more robust against data inaccuracies and uncertainties? What patterns and secrets do we discover in the data that may even help establish new business models and new services? M. Trick differentiated optimization and analytics by saying that the former helps us get the job (since it provides better solutions for practitioners), and business analytics helps us to hold the job (since it uses big data to adjust the solution for practitioners' needs).

The fruitful use of the OR methods in industry were highlighted by various business success stories presented. Realizing that young professionals who are immersed in their academic pursuits also need to be supported and advised during their beginning careers, the conference featured an emerging scholar program and a dissertation award ceremony. Majority of the talks took place in the Kármán auditorium - a university building complex named after a famous aerospace engineer and a pioneer of modern aerodynamics *Theodore von Kármán*, who taught and died in Aachen in 1963.

Going farther back in history, Aachen commemorates the 1200th anniversary of Charlemagne's death. Aix-la-Chapelle (French name of Aachen), organised three temporary exhibitions "Places of Power", "The Art of Charlemagne" and "Lost Treasures" which honour the enormous significance of Charlemagne and the Carolingian Empire for the whole European history. Many participants visited these exhibitions as part of the rich social program which began on the first conference day with an informal get together and a barbecue. The Aachen reception took place on Wednesday at the Aula Carolina, a Catholic church first mentioned in 13th century, and now used by the local grammar school. The conference dinner at the Hotel Pullmann, Aachen Quellenhof was accompanied by the local jazz music ensemble "Klangfahrer". The social program offered tours in and around Aachen, e.g., the *Tour of the Old Town or the Guided Tour of the Cathedral*, which both included the Cathedral - the oldest one in northern Europe, serving as the coronation church for German kings for almost 600 years. With highly adorned interior, it houses a whole range of precious medieval art objects such as the "Barbarossa chandelier", the "Marienschrein", the golden altar frontal "Pala d'Oro" or the throne of Charlemagne. The Palatine Chapel, the original part of the today's Aachen Cathedral conceals a great deal of bible number symbolism and many mathematical symmetries.

Much has been said about Charlemagne's court at Aachen being the center of an intellectual renaissance. For the few days of the conference, Aachen was the site of serious discussion about optimizaiton and analytics – a foretaste perhaps of an OR renaissance?

OR2014 Strengthens German Turkish Bonds

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The German OR Society (GOR; https://gor.uni-paderborn.de/) meetings have increasingly been attended by colleagues from abroad, attesting to its lively relations with other national OR societies within and outside of the EURO. GOR has forged partnership agreements with other societies to encourage rich scientific collaboration. In particular, Gerhard Wäscher (as the President of GOR), and GW Weber (appointed as Representative of GOR in Turkey) were instrumental in the early years of partnership between Turkey (ORST; in Turkish: YAD; http://www.yad.org.tr/) and GOR. This report is prepared in the light of this partnership and friendship.)

OR2014 - *The annual International Conference on Operations Research* of the German Operations Research Society (GOR) was successfully held in Aachen, Germany, from September 2 to 5 (http://www.or2014.de/). The conference venue was the *Kármán-Auditorium* of the renowned *RWTH Aachen University* where researchers, faculties and practitioners from various disciplines and different countries congregated.

More than 750 participants made their way to the 500 presentations, 2 plenary and 12 semi-plenary sessions. Although the main theme was *business analytics and optimization*, an examination of streams and keywords indicate the popularity of combinatorial optimization papers.

Some of the talks included: Ben-Tal (Technion Israel Institute of Technology) *Tractable Solutions of Some Challenging Optimization Problems*; Stephen Boyd (Stanford University) *Convex Optimization: From Embedded Real-Time To Large Scale Distributed*; Karl Dörner (Johannes Kepler Universtat Linz), *Metaheuristics Design Concepts For Rich Problems*; Jan Fransoo (Eindhoven University of Technology) *Optimizing Beyond Company Borders: Horizontal Collaboration In Supply Chain Management*; Peter Gritzmann (Technische Universtaet München) *Data Segmentation*; Eva Lee (Georgia Institute of Technology) *Health Analytics: Personalized Cancer Treatment Planning*; Andreas Marschner (Deutsche Post DHL) *Re-Designing A Parcel Network For Growth*; Laura McLay (University of Wisconsin-Madison) *Delivering Emergency Medical Services: Research, Application, and Outreach*; Jean-François Puget (IBM) *Optimization In The Big Data Age*; Mikael Rönnqvist (Université Laval) *Value Chain Planning For Natural Resources*; and Rakesh Vohra (University of Pennsylvania) *One-Sided Matching with Limited Complementaries*.

A. Sipahioglu presents paper

ORST-GOR Links: Ayse Özmen, Dr. Gerhard-Wilhelm Weber and Dr. Mustafa C. Pinar

The invited and contributed streams were divided into 3 groups: *methodological* areas, *application* areas and *business* streams. The methodological and application areas each had 9 sub-titles. The *business panel* was conducted by four different companies. Thirteen companies conducted presentations and workshops on software such as AIMMS, GAMS, Gurobi and Ilog Cplex, among others.

The three-day program of OR2014 has been carefully drafted to perfectly balance scientific and social events. The social program was perfect for getting to know the city of Aachen. There were also bus transfers to Monschau, located amidst the famous hedges and impressive scenery of the surrounding Venn region, and Maastricht which is located in the Meuse-Rhine "Euregion" representing the diversity of European culture. Other social activities included the: DPDHL get together reception, official Aachen reception and the conference dinner.

OR2014 conference was a lot of things to the participants, but to the delegation from Turkey and the organizers, it was symbolic of the Turkish-German friendship that has grown stronger over the years, evidenced by the increasing number of Turkish participants to OR meetings especially those in Germany. *OR2014* is proud to have 30 Turkish authors in the author list of conference, an indicator of increasing bilateral collaboration.

OR Paper Presentation Trends in the Philippines

Iris Ann Martinez <igmartinez@up.edu.ph>

ORSP participants raise their concerns on the ASEAN integration to pleanry speakers Enrico Basilio of the USAID Advancing Philippine Competitiveness Project and Stuart Jamieson, Managing Director of Nielsen Philippines.

The Operations Research Society of the Philippines (ORSP) National Congress 2014 was held last November 7, 2014 at the Richmonde Hotel with the theme OR: Helping Gear Up for the ASEAN Integration. Plenary speakers dealt with issues that are relevant to the impending economic integration of the Philippines with the rest of the Association of Southeast Asian Nations or ASEAN. This conference prompted the following observations from the Technical Program Committee.)

For more than 5 annual conferences, my colleague, Malu de Guzman U, and I have been in charge of receiving the abstracts or full papers, forwarding them to reviewers, notifying the authors of acceptance, need for revision or rejection and preparing the pages for parallel sessions, abstracts and author index for the Book of Abstracts. We have observed a decline in the number of paper submissions over the years and noted that papers from the academe always outnumbered those from industry. This comes as no surprise, since it is well known that the academe provides more motivation for faculty members and students to present papers at conferences while those in industry have to obtain a series of approvals from management to present their work.

Interesting patterns that we noticed from paper submissions from 2009 to 2014 are as follows:

- The number of papers has declined from 2009 to 2013. Figure 1 shows the number as a percentage of the average number of submissions. The increase in 2014 from 2013 is noted. It is interesting to note that roughly the same number of participants of around a hundred attend the conferences over the years.

- For most years, the significant number of authors has come from academic institutions. With the exception of 2013 when all came from the academe, about 5% to 25% of authors came from industry/government in other years. This is shown by Figure 2.

- Figure 3 shows that from 2009 to 2011, most of the paper presentations were in the area of Applications. From 2012 to 2014, the trend has reversed to Theory. Consistently present among Application papers are the Supply Chain and Operations Management streams. On the other hand, popular Theory papers are in the areas of Systems Dynamics and Data Envelopment Analysis (DEA).

A careful study of these trends will help ORSP put programs in place to encourage paper submissions to its conferences, particularly from those in the government and industry sectors.

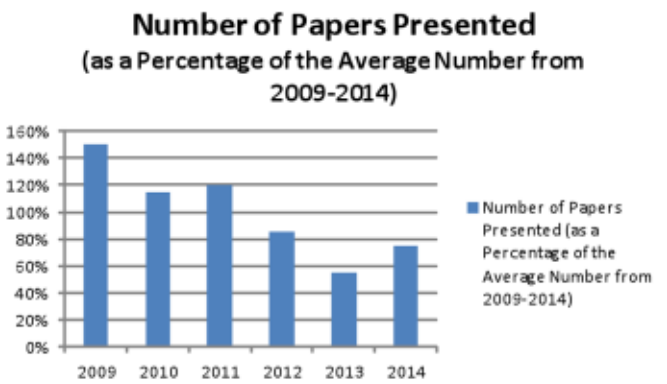

Figure 1. Number of Papers Presented

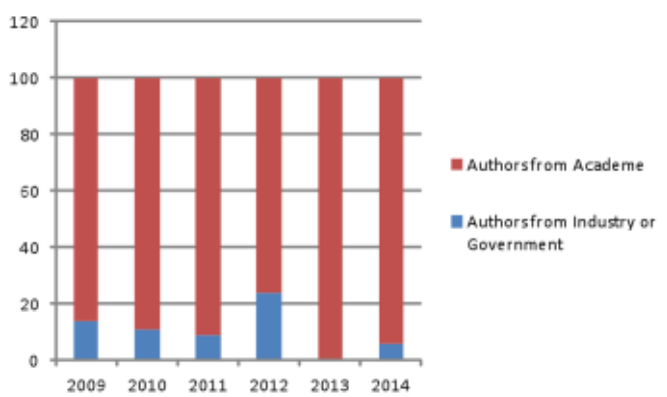

Figure 2. Distribution of Authors from Academe and Industry or Government

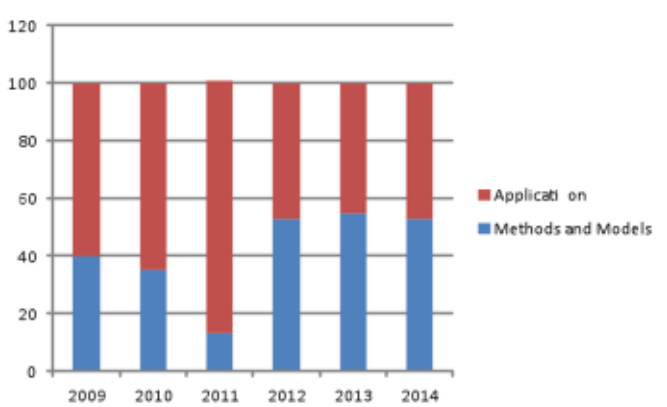

Figure 3. Distribution of Papers Presented into Application and Methods and Models

Korean Operations Researchers Create Value

Chang Won Lee <mycwlee@gmail.com>

KORMS members gathered in Seoul, Korea last November 1 for their conference on *Knowledge ORMS New Era through Convergence and Value Creation*. A total of 258 participants were present, of whom 102 presented papers. Keynote speaker was T.J. Park, Director of Research Supporting Division Hyundai Mobis. He talked about the *Application of Management Sciences in Hyundai Mobis*. The four plenary speeches were on : *Bio Big Data Mining Reaches Human Health and Crop Sciences and Industries* given by Sun Kim of the Seoul National University; *Climate Change and Management Sciences* by YK Kim of the Environment Policy Evaluation Institute and CH Baik of the Dongui University; *Big Data and Complexity Network* by HW Chung of the Korean Advanced Institute of Science and Technology; and *Big Data:The Frontier for Innovation and Productivity* by Phil Kyu Lee of Samsung Electronics.

President Chang welcomes the participants.

The following three journals were released: **Journal of the Korean Operations Research and Management Science Society**, Vol 39, No. 3 (September, 2014); **Korean Management Science Review**, Vol 31, No. 2 (July, 2014); and **Management Science & Financial Engineering**, Vol 20, No 1, (May 2014).

Summer School Lets the Science In

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The 9th Summer School *Achievements and Application of Contemporary Informatics, Mathematics and Physics (AACIMP)* brought together over 70 young researchers and students from nine countries. With the slogan *Let the science in!* The 15-day school featured courses on Operational Research, specifically, Logistics and Finance, Neuroscience, Energy (focusing on Low Energy Buildings) and Applied Computer Science (Data Analysis).

The OR stream of the Summer School featured a combination of academic and industrial lectures by twelve invited researchers and practitioners, which include: *Financial Mathematics and Related Topics in Economics and Development* by Gerhard-Wilhelm Weber (From Middle East Technical University, Ankara, Turkey, Weber was among the first lecturers at the Summer School nine years ago and holds record number of years attended); *Introduction To The Win/Win Theory Of Negotiations* by Boris Yakovlev; *Quantitative Models in Supply Chain Management* by Emel Aktas (Cranfield University, United Kingdom) covering approaches and quantitative models for planning and scheduling, inventory control and distribution management; *Computational Finance and Risk Analytics* by Oleksandr Romanko (IBM Canada and University of Toronto - Canada), highlighting practical quantitative techniques through case studies; and *Decision Making with Multiple Criteria* by Giuseppe Bruno (Università di Napoli Federico II - Italy). An overview lecture was also presented by Oleg Prokopyev (Pittsburg, USA) who discussed formulating and solving linear and some classes of nonlinear integer programs.

Complementing the regular sessions were poster sessions which gave an opportunity for participants to present their own researches and for partner companies such as Samsung, IBM and Yandex to inform participants of grants, scholarships and internships available for young researchers. The poster sessions also included the history, structure and what newcomers can expect from such organizations in the international OR community such as EURO and IFORS. In line with this, *Initiatives for OR Education* had been planned as a stream for the EURO 2015 Conference in Glasgow http://euro2015.org/ to provide a venue for the exchange of experiences about existing initiatives for OR education as well as for sharing and systematizing common approaches and methods of creating, adopting and developing OR courses both in regular and extended education programs.

Willi Weber (in blue shirt, center) joins the young ones of the Summer School.

"From hard marathon hours of studying during the day to fun-filled social events in the evening; It was a journey where I made amazing friends from all around the world. It was definitely a special experience to have so much diversity coming together. Sitting in a class with students and lecturers from all over the world with various backgrounds gave me a chance to learn and approach problems from multiple perspectives", says Baber Chowdhrey from Pakistan, giving his evaluation of the OR course. Oleksandr Romanko, one of the OR-stream lecturers, noted that the Summer School offered "a unique opportunity to gain technical knowledge in the field of Operations Research and Business Analytics, and to meet new friends. Many lecturers from the Summer School continue to collaborate with students from the School for years. It is two weeks of learning from each other, from tutors, from students and from school organizers. The organizing team made an outstanding job of attracting and hosting such a diverse crowd of talented people."

Preparations have started for the 10th AACIMP Summer School http://summerschool.ssa.org.ua that would be hosted once again by National Technical University of Ukraine "Kyiv Polytechnic Institute" (NTUU "KPI") in Kyiv, Ukraine in the first half of August 2015. The jubilee event would be hosted on the same campus where such famous scientists and researchers as Mendeleev, Korolev, Sikorsky and Paton once toiled. More recently for the School that has just been concluded, it can be said that the hard work of the undergraduate and graduate students from the Student Science Association had successfully let the science in.

POC 2014: Sino-Japanese Meeting Gives Way to A Wider Asia-Pacific Conference in Wuxi, China

Gerhard-Wilhelm Weber <gweber@metu.edu.tr> **Zhichuan Zhu** <zhuzcnh@126.com>

The *First Pacific Optimization Conference* (POC 2014; http://poc2014.jiangnan.edu.cn/) organized by *Jiangnan University* (Wuxi, China) and *Curtin University* (Perth, Australia). was held at the *Lakeview Park Resort* in Wuxi, at October 31 to November 2, 2014. Wuxi, the famous cultural city between Shanghai and Nanjing played host to 150 participants where around 100 papers were presented on various theoretical, methodological and applied aspects, displaying optimization as a key technology in science, education and modern industries and societies.

POC 2014 is originally *Sino-Japanese Optimization Meeting (SJOM)*, the first five of which were held in Hong Kong (2000), Kyoto (2002), Singapore (2005), Tainan (2008) and Beijing (2011). During the 5th SJOM held in Beijing, the name of the conference series was changed to *Pacific Optimization Conference* in consideration of the wide geographical distribution of participants.

POC 2014 aimed to provide a forum for scientists, researchers, software developers and practitioners to exchange ideas and approaches, to present research findings and state-of-the-art solutions, to share experiences on potentials and limits, and to open new avenues of research and developments, on all issues and topics related to optimization and optimal control as well as their applications.

Members of the organizing committee were: *International Organizing Committee* co-chairs F. Liu (Jiangnan University, China) and K.L.Teo (Curtin University and Zhejiang University) with members S. Mizuno (Tokyo Institute of Technology, Japan), S. Salleh (Universiti Teknologi Malaysia), X. M. Yang (Chongqing Normal University, China), Y. Y. Yin (Jiangnan University, China), W. Wei (Guizhou University, China), and Chun Hua Yang (Centre South University, China), and Conference Secretary Ryan Loxton (Curtin University, Australia); *Local Organizing Committee* from Jiangnan University chaired by Xiaofeng Gu and members Jun Sun. Wei Fang, Xiaoli Luan, Weili Xiong, Ying, Le Yang and Qin Wu. The Steering Committee co-chairs W. Sun (Nanjing Normal University, China), T. Tanino (Osaka University, Japan) and Y. X. Yuan (Chinese Academy of Sciences) with members X. J. Chen (Hong Kong Polytechnic University), Y.H. Dai (Chinese Academy of Science), J.Y. Han (Chinese Academy of Science), D. Li (Chinese University of Hong Kong), L. Z. Liao (Hong Kong Baptist University), B. S. He (Nanjing University), Z.H. Huang (Tianjin University, China), S. Fujishige (Kyoto University, Japan), H. Kawasaki (Kyushu University, Japan), M. Kojima (Chuo University, Japan), K. Murota (University of Tokyo, Japan), Tamura (Keio University, Japan), K.C. Toh (National University of Singapore), X.J. Tong (Hengyang Normal University, China), R.L. Sheu (National Cheng Kung University, Taiwan), S. Y. Wang (Chinese Academy of Sciences), N.H. Xiu (Beijing Jiaotong University, China), Y.F. Xu (Fudan University, China), H. Yabe (Tokyo University of Science, Japan), X.Q. Yang (Hong Kong Polytechnic University), A. Yoshise (University of Tsukuba, Japan), S.Z. Zhang (University of Minnesota, USA) and X. S. Zhang (Chinese Academy of Sciences); *Advisory Committee* co-chairs S.C. Fang (North Carolina State University, USA) and Zhi Cheng Ji (Jiangnan University, China) with members O. Budakov (Linkoping University, Sweden), X.Q. Cai (Chinese University of Hong Kong), L. Caccetta (Curtin University, Australia), X.H. Chen (Central South University, China), G. Di Pillo (University of Rome La Sapienza, Italy), G. R. Duan (Harbin Institute of Technology, China), R. Enkhbat (National University of Mongolia), B.S.Goh (Curtin University Sarawak, Malaysia), W.H.Gui (Central South University, China), S.J.Li (Chongqing University, China), C.C.Lim (University of Adelaide, Australia), C.T.Kelly (North Carolina State University, USA), P. Shi (University of Adelaide, Australia), C.P. Teo (National University of Singapore), M. Thera (University of Limoge, France), Y.H. Wu (Curtin University, Australia), S.Y. Wu (National Cheng Kong University, China), S. Wang (University of Western Australia), W.X. Xing (Qinghua University, China), C. Xu (Zhejiang University, China), B. Yu (Dalia University of Technology, China) and W.Y. Yue (Konan University, Japan).

Authors Gerhard-Wilhelm Weber and Zhichuan Zhu present their work at the POC2014.

The *International Program Committee* co-chaired by M. Fukushima (Nanzan University, Japan) and J. Sun (Curtin University, Australia), had the following members: A. Bagirov (University of Ballarat), Y.Q. Bai (Shanghai University), R. Burachik, J.V. Burke (University of Washington, USA), J.S. Chen (National Taiwan Normal University), Y.R. He (Sichuan Normal University, China), S.I. Birbil (Sabanci University, Turkey), A. Jofre (University of Chile), J.J. Judice (University of Coimbra, Portugal), C. Kanzow (University of Würzburg, Germany), L.C. Kong (Beijing Jiaotong University, China), J.E. Martinez-Legaz (University of Barcelona, Spain), Y.Q. Ling (Guangdong University of Technology, China), W.Q. Liu (Curtin University, Australia), X.W. Liu (Hebei University of Technology, China), Z.Q. Luo (University of Minnesota, USA), B. Mordukhovich (Wayne State University, USA), Y. Nesterov (Catholic University Louvain, Belgium), J. J. Rückmann (University of Bergen, Norway), J. Royset (Naval Graduate School, USA), M. Sim (National University of Singapore), D.F. Sun (National University of Singapore), X.L. Sun (Fudan University, China), T. Tanaka (Niigata University, Japan), T. Tsuchiya (National Graduate Research Institute for Policy Studies, Japan), S. Uryasev (University of Florida, USA), Z. Wan (Centre South University, China), G.W. Weber (Middle East Technological University, Turkey), H.L. Xu (Curtin University, Australia), N. Yamashita (Kyoto University, Japan), S. Zhang (Nankai University, China) and G.L. Zhou (Curtin University, Australia).

The only participant from Europe, Willi Weber gave his paper on *Optimal Control of Stochastic Hybrid Systems with Jumps under Markov Switching Processes - Applications in Finance, Economics and Science*. Throughout the conference, Willi tireliessly promoted METU (http://www.metu.edu.tr/tr) and EURO (The Association of European Operational Research Societies; http://www.euro-online.org/), at the same time contributing to deeper friendship and collaboration between the two regions of the world. As a young researcher, Zhichuan found this conference an excellent opportunity to present his paper on *Globally Convergent Homotopy Algorithm for Solving Principal-agent Bilevel Programming* to international experts and to establish a network with other researchers of the same interests for future collaboration. Zhichuan is also thankful to EURO and METU for the support and encouragement related to his attendance at the *POC 2014*.

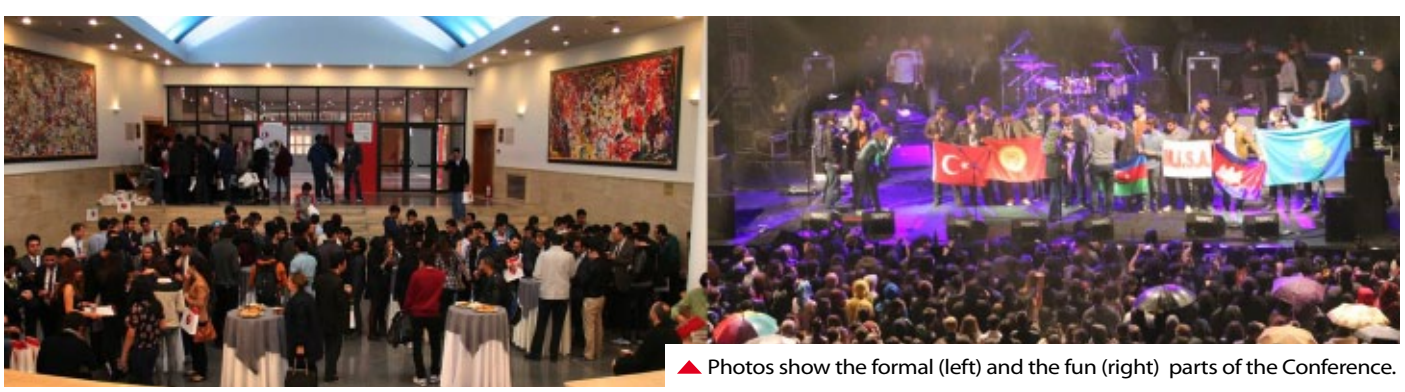
Greeks Prepare for 4th International Symposium

On behalf of HELORS, Evangelos Grigoroudis announces that the 4th International Symposium and 26th National Conference on Operational Research (http://www.helors2015.tuc.gr) will be held in Chania-Crete, Greece (Creta Paradise Hotel), from June 4 to 6 of 2015. The Conference covers all topics relevant to the theory and applications of OR/MS and its connections with other disciplines.

Along with conference co-chair, Michael Doumpos, he invites abstract submissions of not more than 600 words for submission until February 28, 2015. Authors are also invited to submit full papers (max 5 pages) for publication in the proceedings of the Conference. The proceedings will be available in electronic form (with ISBN). All submissions for publication in the proceedings will be reviewed by members of the scientific committee. Selected papers from the Conference, after undergoing the review process, will be published in a special issue arranged with the *International Journal of Decision Support Systems* as well as in an edited volume that will be published in the *Springer Proceedings in Business and Economics*.

Opening Doors to International Students

Berat Kjamili <beratkjamili@gmail.com>, **Gerhard-Wilhelm Weber** <gweber@metu.edu.tr>



Photos show the formal (left) and the fun (right) parts of the Conference.

METU International Student Association, (MISA http://misa.metu.edu.tr/), was founded in 2013 by international students at Middle East Technical University (METU) in Ankara, Turkey with the purpose of bringing international students together and providing them the means to meet other students who study abroad. Hosting 100 different countries, METU was the natural birthplace of such an international students' association. In its first year, the association prepared and conducted scientific activities and congresses, sports and other social events. Lately, it has been seeking projects related to United Nations development programs, European Union initiatives, international congresses and, possibly, interdisciplinary scientific undertakings of such associations as the IFORS and EURO.)

MISA organized the First International Student Congress themed *International in Turkey* at METU in Ankara (https://www.facebook.com/events/210137892529894/). The congress attracted 250 participants from METU and other universities from Ankara, Istanbul and other cities. They discussed international students' situations, questions and problems which occurred in Turkey and abroad. Keynote spekers *Bülent Aksoy* (Institute of Education, Gazi University, Ankara, Turkey) talked about *Turkish Policy Regarding International Students* while *Sedat Sirmen* (Faculty of Law, Ankara University, Ankara, Turkey) touched on *International Students Rights, and Gerhard-Wilhelm Weber* talked about *Foreigner's Experiences in Turkey*.

How OR relates to this activity was summed up by Weber as follows, "Not all students of MISA are from Operational Research or from directly related areas. But since IFORS and EURO have demonstrated their interest and ability for interdisciplinary collaboration with various aspects of education, science, industry and social life, it is possible for our OR family to share educational and developmental experiences at MISA congresses. In turn, it is a possibility that MISA can be tapped for such projects as *IFORS Resources in Education* and for *Developing Countries* (http://ifors.org/web/), and as presenters and stream organizers on topics that will help bring forth a better world."

Section Editor: **Arabinda Tripathy** <tripathy44@rediffmail.com>

EURO WG-ORD
EURO Working Group on OR for Development

IFORS
International Federation of Operational Research Societies

Call for Participants

EWG ORD- IFORS Workshop on OR for Development
Glasgow, Scotland
July 9-10, 2014
(in conjunction with EURO 2015)

Background
The EURO Working Group on Operational Research for Development (EWG ORD) (http://www.euro-online.org/web/ewg/29/or-for-development-ewg-ord) aims to promote communication and collaboration among researchers working in areas of operational research for development within and outside of EURO. EWG ORD actively organized / co-organized workshops or streams on operational research for development in all of: EURO 2006, EURO 2007, EURO 2008, IFORS 2008, EURO 2009, EURO 2010, IFORS 2011, EURO 2012, EURO 2013 and IFORS 2014. These activities had been successful in promoting the importance of operational research and its related techniques to improving living conditions in the developing and developed countries.

Call for Participants
Operations Researchers who have done work in the area of OR for Development are invited to participate. To qualify, participants are required to submit a full paper on their work which have used Operations Research to help decision-making process in the area of education, health, and other basic services, water, technology, resource use (physical or financial), infrastructure, agricultural/industrialization, environmental sustainability that help optimize development in view of constraints and limited resources. A stress on developmental issues will be an important factor; papers of a purely technical nature, or those that have no relevance in the developmental context, will not be considered.

Participants who have taken part in previous ICORD/EWG Workshops and those who have brought their work forward are encouraged to attend to report on developments on their previously presented work.

Conference Format
The Workshop will feature presentations by the participants of their papers. Paper reviewers will be assigned in advance. All participants will be given all the papers of accepted participants in advance, which will give them time to study the other papers. Ample time will be given for a discussion of each of the papers presented. There will also be plenary session/s for invited speakers.

Important Dates
Full Paper Submission: January 16, 2015
Notification of Acceptance: February 6 , 2015

Subsidised Conference Registration Fee
EURO 200, inclusive of materials, snacks & lunch

Support for Participants
A limited number of slots for registration support will be available, and will depend on the quality of material submitted.

For inquiries, please contact:
Elise del Rosario elise@jgdelrosario.com
Honora Smith honora.smith@soton.ac.uk
Gerhard-Wilhelm Weber gweber@metu.edu.tr

Watch out for announcements on the venue and other details to be released January 2015.

IFORS
International Federation of Operational Research Societies

International Conference on OR for Development, ICORD 2015

December 3-4, 2015 | Colombo, Sri Lanka

Preparations are being made for the ICORD 2015 (International Conference on Operational Research for Development 2015) to be held in Colombo, Sri Lanka from December 3 to 4, 2015. ICORDs are organised in a workshop format. It provides adequate time for presentation by the participants followed by discussions. Formal discussants/ reviewer (amongst the participants) are identified for each paper based on the theme of the paper and interest of the participants, in addition to an open discussion.

ICORDs have been sponsored by IFORS since 1992. It had been organised in India, Brazil, India, Philippines, South Africa, and Tunisia, Italy and Spain. (http://ifors.org/web/icord-history/). ICORDs have been having participants from academic, research and practicing community with interest/ involvement/ experience in development related issues and/ or developing countries. As the workshop is rather intense in its deliberations, format limits participants to 30. Focused areas include broader context of education, health, community welfare, energy, environment, urban planning, and agriculture. Details on the venue, application, will be released in January 2015. Please check the website. If you wish to be included in our email alerts, please contact Elise del Rosario (elise@jgdelrosario.com) or Arabinda Tripathy arabindatripathy44@gmail.com.

Interested to participate?
Operations Researchers who have done work in the area of OR for Development are invited to participate. To qualify, participants are required to submit a full paper on their work which has used Operations Research to help decision-making processes in the area of education, health, and other basic services, water, technology, resource use (physical or financial), infrastructure, agricultural/industrialization, or environmental sustainability. The work should have helped optimize development in view of constraints and limited resources. A stress on developmental issues will be an important factor; papers of a purely technical nature, or those that have no relevance in the developmental context, will not be considered.

Limited financial support will be available to qualified participants.

EURO WG-ORD
EURO Working Group on OR for Development

Section Editors: Sue Merchant <suemerchant@hotmail.com>, John Ranyard <jranyard@cix.co.uk>

Optimizing Staff Management of Desk Customer Relations Services with OR

Daniele Vigo, University of Bologna and Optit srl, Italy <daniele.vigo@unibo.it>
Claudio Caremi, Angelo Gordini, Optit srl, Italy
Sandro Bosso, Giuseppe D'Aleo, Beatrice Beleggia, Hera Comm srl, Italy

CRM

Customer Relationship Management (CRM) is a core issue for the competitiveness of modern companies. Particularly for the multi-utility sector, reaching and keeping appropriate service quality of CRM is not only a constraint imposed by regulations, but is a fundamental tool for keeping customer loyalty in a highly competitive market.

CRM services for large and medium sized companies manage direct contact with the customer through several channels, such as physical Customer Contact Desks (CCDs) located in strategic parts of the territory and Call Centers (CCs) which handle millions of requests per year through call center operators. In such a demanding environment, achieving a trade-off between *efficacy* to achieve appropriate service levels such as waiting times, and *efficiency* to control the operational cost of the system, is a challenge that directly affects competitive advantage.

Hera Group

The Hera Group is one of the largest Italian multi-utilities with more than 3.5 million customers of its energy, water and environmental services. Hera Comm, a subsidiary, is responsible for the CRM for the whole group. It manages a network of 80 CCDs with a desk staff of 200 who receive more than 750,000 contacts per year. The larger CCDs, located in the major towns of Hera's territory, are supervised by local Desk Managers (DMs) who control up to 15-20 counters open from 8 am to 3 pm of each weekday. A central Planning Unit (PU) supervises and coordinates the CCD's activities. It is in charge of long-term planning of the system, which includes: monitoring territory coverage, location and sizing of CCDs, and definition of annual performance objectives such as Service Level Agreements (SLAs). In addition, the central PU supports short-term planning by providing DMs with forecasts of expected demand, defining staff assignment, and monitoring the performance of the system.

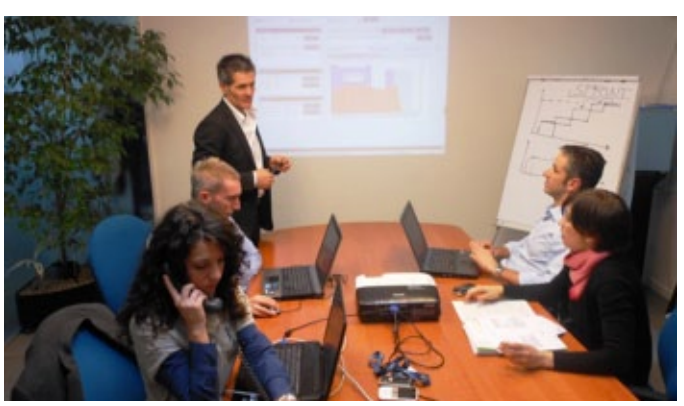


Figure 1. One of the periodic meetings of the central Planning Unit at Hera Comm

SPRINT

Developed for Hera Comm, SPRINT is an advanced Decision Support System (DSS) that provides a complete management and optimization system for CCD personnel who deliver customer services. The SPRINT DSS has been developed by Optit, an academic spin-off company of the University of Bologna, as a result of an extensive project started in 2009. SPRINT was implemented in 2010 and has been fully operational since February 2011. It initially supported the central planning office and the eight larger CCDs. In 2012 , the system was gradually extended to medium-sized CCDs and now covers more than 85% of the demand for Hera Desk CRM.

SPRINT provides the following:

- Forecast of arrival rate at the CCDs;
- Optimized scheduling and rostering of the personnel of each CCD, ensuring that target SLAs are met;
- What-if analysis for user-defined scenarios; and
- Key Performance Indicators (KPIs) and objectives monitoring, allowing for their timely control during the year.

At the core of SPRINT are powerful and fast forecasting and optimization modules which implement state-of-the-art Operations Research approaches that compare favorably with other models[1].

More specifically, the forecast module is based on an M5-model tree that, by combining regression and classification, predicts the daily arrivals at each CCD for a time horizon of one or more months. The tree-structured regression is built on the assumption that functional dependency between input values and forecast is not constant in the whole domain, but can be considered as such in smaller subdomains. The partition of input domain and the corresponding linear models are derived automatically by the method that uses as input the historical data on arrivals and other relevant service demand drivers, such as information about the billing process. Experimental results obtained by the model are extremely good, as shown in Figure 2, which reports the average results obtained in 2011-13. SPRINT's forecast are 25-30% more accurate, in terms of mean absolute percentage deviation (MAPD), than such competing methods used in literature for long-term forecast of arrivals at service desks as de-seasonalized historical averages. Moreover, the days with large errors in the forecast (i.e., with MAPD > 30%) are also considerably reduced.

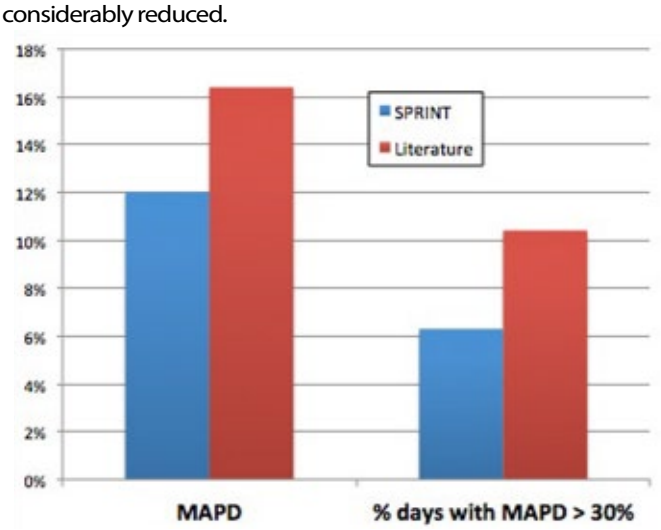


Figure 2. Quality of the SPRINT forecast module in terms of Mean Absolute Percentage Deviation

[1] *D. Vigo, C. Caremi, A. Gordini, S. Bosso, G D'Aleo and B. Beleggia, "SPRINT: Optimization of Staff Management for Desk Customer Relations Services at Hera", Interfaces 44(5), 461-479, 2014.*

The other main SPRINT module is the Optimizer, which implements a two-phased approach incorporating an explicitly tailored Integer Linear Programming algorithm to generate a schedule. Scheduling personnel is done by initially relaxing some SLA-related constraints and defining the staffing required by using an innovative adaptive rule that is designed and tuned for scheduling desk personnel. The overall quality and feasibility of the schedule is determined through a fast custom-built simulation model. The two components interact in an iterative process that converges within a few seconds to the solution that meets the required service level with minimum use of the available personnel for desk activities. Thus, resources available for other duties, such as back-office or sales activities are maximized. The schedules produced by SPRINT are generally considered by planners as very consistent and efficient compared both to manually-generated ones and to those produced by competing methods in literature.

From 2011 to 2013, the total demand served increased by more than 25% without requiring an increase in the number of staff. Previously, an increase in staff proportional to that of the demand was required to maintain service levels... Its success was achieved by a good blend of high quality methodological support, strong managerial vision and state-of-the-art technological implementation.

Results

The quantitative results obtained during more than three years' use of SPRINT are excellent. From 2011 to 2013, the total demand served increased by more than 25% without requiring an increase in the number of staff. Previously, an increase in staff proportional to that of the demand was required to maintain service levels. Furthermore, the mean waiting time for customers was reduced from 16 to 10.3 minutes and the customer satisfaction index of desk CRM rose from 72 to 81 points. It is therefore not surprising that for the same period, Hera Comm regularly ranked first among Italian utilities for the quality of CRM services offered.

Conclusion

Sandro Bosso, director of the Consumer Market Division at Hera Comm, declared, "SPRINT represents a perfect example of OR methods application in the real world. Its success was achieved by a good blend of high quality methodological support, strong managerial vision and state-of-the-art technological implementation. The achievements of the project will certainly boost the diffusion of OR not only within Hera but also in other Italian companies, as new performance standards are being set in this field."

Figure 3 the SPRINT interface for daily optimization

Tutorial

Volunteering To Do OR Projects For Charitable* Organisations

By John Ranyard <jranyard@cix.co.uk> , **Sue Merchant** <suemerchant@hotmail.com> ,
Sophie Carr and **Felicity McLeister** (scheme co-ordinator)

Charitable means that the organisation does not make profits but uses its income (often obtained from public donations and other fund raising activity) to achieve its charitable objectives, i.e., for the good of some section of society, e.g., Homeless people, Cancer support.

The UK ORS has recently set up a scheme for volunteers to do OR studies for charitable organisations in the UK (the 'Pro Bono' initiative). The scheme allows volunteers to carry out OR projects for charitable organisations in the UK at little or no cost to those organisations. The broad aims of the project are to spread the benefits of OR more widely, to help charitable organisations become more efficient and effective using OR methods, and to give OR analysts a wider range of experience than they might obtain in their main jobs.

How does the scheme work?

The UK scheme currently has over 150 volunteers across the country who put their names on to a register of those who are prepared to work on projects in their spare time. Once a charitable organisation expresses an interest in receiving such support, an initial project scope is drawn up. Information is then sent to all the volunteers who apply to work on the project if they feel able to undertake it. For more detailed information on the scheme please visit: http://www.theorsociety.com/Pages/Probono/Probono.aspx

What progress has been made this year for organisations?

In the past 12 months, the scheme has completed 7 projects and is currently working on a further 14. The organisations range from tiny organisations that are completely volunteer-run through to large national charities and have ranged from a dog charity to a food bank. One of these studies is summarised below and others can be seen on the IFORS website (http://ifors.org/web/pro-bono-or/index.html)

All the organisations the scheme has worked with have provided overwhelmingly positive feedback. Here is what a few of the organisations that have already benefitted from using OR volunteers had to say:

- "We've benefited hugely from your work and support in all areas of the project, and from an organisational perspective you've enabled us to take a highly professional approach to increasing the efficiency of our charity."
- "The work is already supporting our planning and development for next year and allowing us to focus our thoughts and decisions on the places of most importance for our organisation"
- "Brilliant – it makes the predictions of risk visible. This will be so useful"

How have volunteers benefitted?

The feedback from the volunteers has been very positive. The scheme allows volunteers to practice in a wider arena and enhance their skills. Some of the volunteers enjoy the experience so much they go straight on to another project once one is complete! The scheme has a wide range of volunteers from those starting out in their careers in OR to retired consultants. Some volunteers volunteer completely in their own time whilst others are able to use some company 'volunteer' days. The projects are suitable for individuals, pairs or teams. A recent project for the Royal Society for the Prevention of Cruelty to Animals (RSPCA) used a team of consultants from the same company. RSPCA benefitted from the breadth of experience and the team reported that it had been a fantastic opportunity for team bonding and increasing team spirit. Other projects have used a pair of analysts who weren't previously known to one another but were matched up by the 'Pro Bono' project manager. Pairing analysts up reduces the amount of time each analyst has to commit, and analysts benefit from one another's skills and experience. Pairing with a mentor can also be arranged.

Volunteering roles can involve actively volunteering on a project, mentoring and more recently quality assurance. On projects where the volunteer provides analysis/reports/recommendations a process has been put in place by which another volunteer performs quality assurance.

Here is what a few of the volunteers have said:

- "It's a chance to make a difference, practise getting to the heart of a problem quickly, meet some very dedicated people and use techniques which you might not in your every day job"
- "I've really enjoyed working with third sector organisations and found the staff extremely positive about the contribution we make"
- "Working as a 'pro bono' volunteer is a great way to contribute some professional expertise to some truly worthwhile causes. The Charitable sector is full of people who feel passionately about their Mission, so working with them is invariably a positive learning experience"

Spreading the word about the scheme

Now, for the benefit of other OR societies who may wish to do something similar, the UK ORS is sharing much of its material with a wider audience through the IFORS website to save other societies having to start from a blank sheet of paper (see http://ifors.org/web/or-studies-for-charities-by-volunteer-or-analysts/). The ORS hopes that other societies will find this useful and would welcome feedback so it can continuously improve its systems and procedures. It is hoped that in due course, other countries who adopt similar schemes will share their material for the benefit of all. Felicity McLeister (felicity.mcleister@theorsociety.com), OR Pro Bono Project Manager for the UK OR Society, will be happy to discuss the scheme with other societies.

Summary of a recent study

In the next few issues of IFORS News we hope to include summaries of volunteer projects to show how beneficial such schemes can be. Here is the first one.

Dachshunds And Data: Developing A Tool To Help Dog Breeders Predict Genetic Risks

Sophie Carr of Bays Consulting Ltd. and Ian Seath of Improvement Skills Ltd produced an Excel tool to inform dog breeders' decisions about which pairs of dogs could be bred at minimum risk of producing puppies having a form of epilepsy, Lafora disease.

There are a growing number of DNA tests to help dog breeders identify potential breeding pairs that could be affected by inherited diseases. In particular, Miniature Wirehaired Dachshunds are known to suffer from a form of Epilepsy called Lafora Disease. Whilst there are two different tests available to determine if a Dachshund carries the autosomal recessive mutation, not every dog is tested. Consequently this creates 4 populations: tested; untested; clinically affected (i.e. showing symptoms) and clinically not affected.

The Excel tool was developed to evaluate the risk factors associated with the mutation status of DNA tested and untested dogs. The results of the project will be used as part of an education programme to help breeders understand why DNA testing for Lafora Disease is important. To develop the tool, the analysts spent a couple of days examining the problem and available data before agreeing upon the statistical approach to be taken. Whilst there are many complex statistical techniques used within the field of genetics testing, what was required was a simple, robust solution presented in Excel.

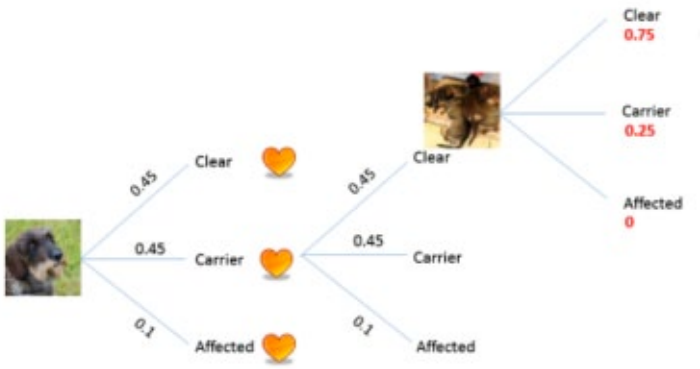
Initially the probability of breeding puppies which are clear, carriers or affected was determined for every possible parent combination. For example, if two dogs which are clear of Lafora breed, all puppies will be clear. However, if a dog which is clear of Lafora breeds with a dog which is known to be affected, the resulting puppies will all be carriers. The combination of possible outcomes are shown in the Table below:

		Probability the puppy is		
		CLEAR	CARRIER	AFFECTED
CLEAR	CLEAR	1	0	0
CLEAR	CARRIER	0.75	0.25	0
CLEAR	AFFECTED	0	1	0
CARRIER	CARRIER	0.25	0.5	0.25
CARRIER	AFFECTED	0	0.5	0.5
AFFECTED	AFFECTED	0	0	1

The values in the above table can be used to inform on the theoretical results for a puppy being bred from dogs whose Lafora status is known. However, these values alone do not answer the problem when two dogs randomly drawn from the population breed. Using data made available as part of the project, the underlying probability of a Dachshund being clear, a carrier or affected by the disease was calculated.

The final, simple, approach is outlined in the Figure on the right. Should the dog be lucky enough to meet a mate then both have an associated probability of being clear (45%), a carrier (45%) or affected (10%). The example shown has a carrier and clear dog producing a litter, for which the puppies will be clear or carriers of Lafora. Probability trees for all combinations of interest were produced within an Excel spreadsheet.

The generation of this simple tool, which is now managed by the Dachshund Breed Council has been used to review quarterly litter registration statistics published by the Kennel Club and



feeds into a communications campaign to increase awareness of Lafora disease among breeders and puppy buyers. Predictions, such as those shown above, lead to informed decision making relating to a range of different breeding strategies and thereby supports the overall welfare of the dogs.

Book Review

"Roots" Leaves No Stone Unturned

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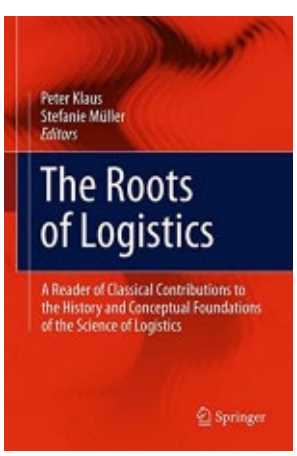
The Roots of Logistics – A Reader of Classical Contributions to the History and Conceptual Foundations of the Science of Logistics by Peter Klaus and Stefanie Muller editors, 2012. Springer, Heidelberg, Germany. pp 427, ISBN 978-3-642-27922-5, 129.95 EURO (Hardcopy).

It is well-known among people working in logistics and supply chain management that this discipline had its origins in the military, which goes back more than a century. French General Antoine-Henri Jomini (1779-1869) is credited with the first documented use of the term logistique. In his classic work *The Art of War*, he defined logistics through 18 principal duties, one of which was referred to *as the preparation of all material necessary for setting the army in motion*.



Modern logistics, or supply chain management, which encompasses all the activities within a company or organisation, has become a main function in business. An important component of managerial practice, it has grown into a powerful industry within countries and in the global market place. Nonetheless, there are still questions in academic circles on whether logistics is a science. Many see logistics as part of, among others, marketing, operations management, operations research. In addition, there is no consensus on its definition, boundaries and essential characteristics. The book ***The Roots of Logistics*** aims to contribute to this debate by laying down all contributions of a wide spectrum of disciplines along the evolutionary path of the science of logistics.

The book consists of three parts touching on the different aspects of logistics. In all except one, these chapters contain full or excerpts of previously published papers as well as documents from books and scientific journals, some of which are difficult to accesss. An introductory essay by the editors presents the context of what is covered in the book. For each of the three parts, the editors underline the importance of the chapter, what it contains and their relevance to the development of the concept of logistics.

Part one deals with the early history, terminology and conceptual roots of logistics. Part two addresses the evolution of business logistics as an autonomous science. Part three covers the contributions from a collection of disciplines to the "instrumentation of logistics" - terminology, concepts and methodological approaches as we know them today.

Part one consists of two sub-sections. The first sub-section focuses on the early thinking and origins of logistics and how it contributed to war preparations and the task of supplying required resources to the forces on the ground. It set the tone for what was to become more than just military logistics, evidenced by a paper published in 1955 by Oskar Morgenstern, which puts forth the formulation of the Theory of Logistics. Then enter researchers who considered the utility of place, time and procession which together represented the utilities of products. Sub-section two includes a number of contributions outlining the emergence of logistics as a discipline and component of marketing. Logistics was the *other half of marketing* and reference was made to this as *matter in motion*. At this point, literature started referring to this half of marketing as *physical distribution*. Marketing logistics was seen as the link between the producers and the consumers. The aim is to make sure that the right product is supplied to customers at the right time and the right place. A paper by Converse (1955), *"illustrated the enormous potential for cost reduction in rationalizing physical distribution activities – referring to network optimization, modal choices, logistically optimized packaging, and other levers which today are part of the tool kit of professional logisticians"*, thus starting what is currently generally accepted as the discipline of logistics.

As a subset of marketing, there were still challenges of transportation (creating utilities of *place*), storage and warehousing (creating utilities of *time*) and sorting, picking/packaging, consolidating, changing the order and arrangement of things (creating utilities of *possession*) that needed attention.

Part two comes in with the evolution of logistics as an autonomous field covered in two separate sub-sections. Voigt (1953) focuses on the influence of transportation on industrialization and vice versa. Seven factors determining the usability of a transportation system to meet demand were identified, including, among others, network density, speed, frequency, and predictability. Another building block of importance is covered in a paper addressing the generic functions of *placing, pricing*, and *patterning* which were extended to include *coordination logistics* as well as *flow systems*.

It is heartening to note that prominent OR personalities were part of the scientific community that inspired, informed and added to the concepts and ideas and provided the building blocks to what is today considered as the science of logistics.

In the sub-section entitled The Emergence Of A Flow Systems Paradigm, the topics of papers include the scientific fundamentals of organizations, industrial dynamics, the Toyota production system, supply chain management and the importance of time. Forrester (1958) in his seminal paper on industrial dynamics anticipates one of the fundamental premises or principles of modern logistics when he makes the following statement is the first paragraph of his paper, *"Company success depends on the interaction between the flows of information, materials, money, manpower and capital equipment".* The just-in-time, kanban system, among the concepts from the Toyota way of doing things (Ohno,1978), revolutionized logistics management and thinking in a big way. Oliver and Webber (1982) were the first to coin the term *supply chain management* viewing the supply chain as one entity thus realizing that *supply* is a joint objective of all elements on the *chain*.

The contributions from the quantitative and engineering sciences are briefly outlined in the initial three chapters (sub-section one) in part three. The piece on the most appropriate location for a logistics facility goes back to the work done in 1882 by German economist Launhardt. Operations Research contributions feature strongly in the section on vehicle routing and scheduling between nodes on a network as well as on the integration of production planning issues (e.g., production capacities, optimal inventory levels, scheduling system for a multiple plant/ multiple product, demand seasonalities). A significant number of papers published in OR journals are cited.

In sub-section two, the importance of a production-line approach through *manufacturing in the field* gives a totally different perspective on how the service industries should be managed. The initial thinking, components and contributions to current day aspects of risk management and resilient supply chains are covered in this section. In the third sub-section of part three, contributions from economics and organisational sciences are described. This part also highlights various logistics building blocks such as: the nature of a firm; the architecture of complexity; production, consumption and externalities; educational organizations as loosely coupled systems; and markets, bureaucracies and clans.

As an Operations Researcher who has been intimately involved with logistics and supply chain management for many years, I welcomed the opportunity to dig up the roots of this discipline, to understand its history and how various disciplines contributed to it. I was particularly pleased to find the prominent role that operations researchers have and continue to play in its development. It is heartening to note that prominent OR personalities were part of the scientific community that inspired, informed and added to the concepts and ideas and provided the building blocks to what is today considered as the science of logistics. The editors of the Roots of Logistics, through casting their net very wide in researching the history of this important discipline, were indeed, able to offer "A Reader of Classical Contributions to the History and Conceptual Foundations of the Science of Logistics".

References used in this book review can be obtained on request from the book reviewer.

Streams from IFORS 2014

Extending the Boundaries of IFORS

Jakob Krarup <krarup@diku.dk>

A talented scientist, a group of scientists, a group of groups, a club, a national society, a group of national societies, an international federation: embarking from the eve of WWII these stages of development are what led to the birth of IFORS in 1959. Below is an excerpt of the talk delivered by the author during IFORS 2014 in Barcelona.

Patrick Blackett (1897-1974), known as the Father of OR, participated in pre-war studies of what would be-come known as radar, established the first OR unit later referred to as "Blackett's Circus" with a main pur-pose of developing anti-aircraft defenses and defenses against submarines. Amongst the many honours be-stowed on him, Blackett was awarded the Nobel Prize in physics (1948) and granted life peerage as Baron Blackett of Chelsea (1969).

A club, and several national societies emerged: *Operational Research Club, UK (1948); ORSA, USA (1952); OR Society, UK,* replacing the former *Club (1954); Societé Française de R.O. (1956); AKOR,* Germany (1957). 1957 was also the year for the First International Conference on Operational Research, held in Oxford, UK: an event, later recognized as a truly exceptional milestone in the history of OR.

A group of national societies, an international federation: IFORS was established in 1959 by France, UK, USA. Subsequently other national societies from around the world joined the family: **1960:** Australia, Belgium, Canada, India, The Netherlands, Norway, Sweden; **1961:** Japan; **1962:** Argentina, Germany, Italy; **1963:** Denmark, Spain, Switzerland; **1966:** Greece, Ireland, Mexico; **1969:** Brazil, Israel; **1970:** New Zealand; **1972:** Korea; **1973:** South Africa; **1975:** Chile, Finland; **1976:** Egypt; **1977:** Turkey; **1978:** Singapore; **1979:** Austria; **1982:** China, Portugal; **1983:** Hong Kong, Yugoslavia; **1986:** Iceland; **1988:** Malaysia.

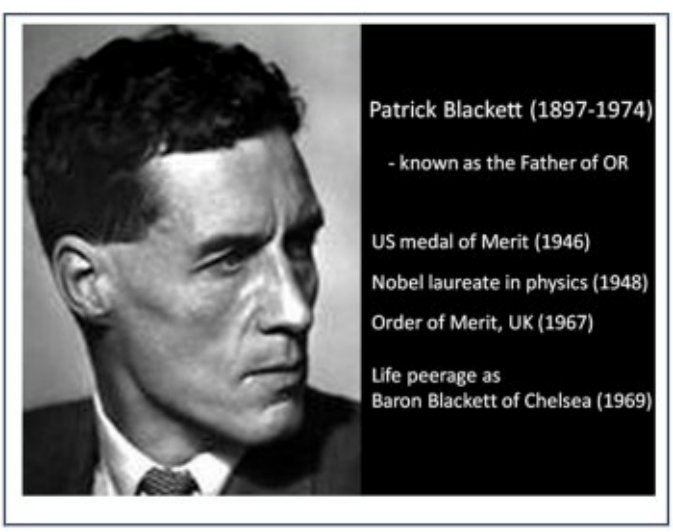
The disintegration of the Soviet Union caused several post-communist countries to apply for membership. Help was given to Hungary and Poland and informal meetings were held with OR colleagues in the Baltic countries, Bulgaria, Czechoslovakia, German Democratic Republic, Romania, and Russia.

Furthermore, since IFORS can accept only a single national society from each country, a consequence of the reunification of the German Democratic Republic (GDR) and West Germany in 1990 was that former GDR researchers were encouraged to join (the West German) *Deutsche Gesellschaft für OR*. A related difficulty was that Poland since the late 80s had two OR societies, the (OR Working Group of the) *Polish Cybernetical Society* (PCS) and the *Polish Operational and Systems Research Society* (POSRS) both competing for membership in IFORS. Russia was never a member.

The following two decades witnessed a further growth of IFORS: **1990:** Philippines, Poland; **1992:** Hungary; **1993:** Bulgaria; **1994:** Croatia, Czech Republic, Slovakia; **1998:** Belarus; **2002:** Bangladesh, Colombia, Lithuania; **2007:** Slovenia; **2009:** Iran, Uruguay. It should be noted, though, that the memberships of Bangladesh, Bulgaria, and Egypt for various reasons were terminated.

Extending the borders of IFORS. Different areas of Africa were approached, yielding the following results:
Kenya Isaac Mbeche writes: ORSEA is the OR Society of Eastern Africa. ORSEA's 10th Anniversary will be celebrated at 10th International OR of East Africa Conference, Nairobi, Kenya, 16-18 October 2014. The Conference is organized in cooperation with Univ. of Dar es Salaam, Univ. of Nairobi, and Makerere Univ. Theme: Reflections of OR, applications of OR, and potential of OR. See http://www.orsea.net.
Tunisia Youssef Masmoudi writes: Encouraged by Elise del Rosario, President of IFORS, I initiated the establishment of the Tunisian OR Society (TORS) in 2013. See our new website at http://www.tors-tn.org/. OR is taught at our universities. Application for membership of IFORS has been submitted.
From Alexis Tsoukiàs (Director of LAMSADE, Paris and in charge of the African OR project 1999-2002, and 2004-2007) came the following input.
Algeria: In Algeria there is no single OR society but at least two strong groups. The first one is leaded by Prof. Moncef Abbas, Université Houari Boumedienne, Algiers, which offers a Master in OR and a diploma in OR Engineer. The second group is located in Bejaia and organised around the laboratory LAMOS (www.lamos.org) directed by Prof. Djamil Aïssani. Also here a Master in OR is offered; besides regular conferences named COSI are organised.
Lebanon: The American Univ. of Beirut has a strong group in combinatorial optimization leaded by Faisal N. Abu-Khzam (http://sas.lau.edu.lb/csm/people/faisal-abukhzam.php). This group organised ECCO 2004 where ECCO is the European Chapter on Combinatorial Optimization.
Morocco: The President of the Moroccan OR Society (SOMARO) is Prof. Abdelatif Mansouri, Univ. of Marrakech. CIRO, biennnial OR conferences are organised in cooperation with people from Canada and France. The latest news, however, was an announcement of CIRO'10, the *Fifth International OR Conference*. It is therefore uncertain whether this series of meetings has been terminated.
Nigeria: Reference is made to Ismaila Salawus's article "Operations Research Practice in Nigeria", IFORS News, March 2014.
Qatar: Qatar Univ. has a Group on OR and Industrial Engineering leaded by Mohamed Haouari (mohamed.haouari@qu.edu.qa) who actually is a Tunisian also involved in the establishment of the Tunisian OR Society.
The Emirates: Generally speaking the universities at The Emirates are also investing in OR.
West Africa: ROCARO: groups most West African OR researchers from Cameroun up to Senegal and existing organizations in Algeria and Morocco. Based in Burkina Faso, Univ. of Quagdougou which offers one of the few M.Sc. degrees in OR in this part of the African Continent. ROCARO appears to have been inactive for a while as the latest contact dates back to 2010.
Operational Research Practice in Africa (ORPA): A network set up with the purpose of organising a series of conferences named ORPA. Alexis attended the latest meeting held in Senegal in 2010. A forthcoming event, ORPA'2015, will be held in Algiers, Algeria, in April 2015 as announced on the website http://orpa2015.sciencesconf.org/.

Today's OR people like other scientists ought to know their roots and be familiar with at least some of those who paved the road before them. Thus, Stephen Budiansky's "Blackett's War", published by A.A. Knoff in 2013, should be on their bookshelves. Furthermore "Profiles in Operations Research", written and edited by A.A. Assad and S. Gass, Springer, 2011, is strongly recommended. 43 pioneers and innovators are covered. Ch. 1, written by M.W. Kirby and J. Rosenhead, provides a profile of the Father of OR.



Past, Present and Future Aspects of International OR

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Gerhard-Wilhelm Weber <gweber@metu.edu.tr>

The stream *International Aspects of OR History and Education* at IFORS 2014 gathered two former IFORS Vice Presidents, *Jakob Krarup* who gave insights into how IFORS became what it is today and where it might head in the future, and *Graham Rand* who talked about an initiative that might spread worldwide. The stream was divided into two sessions: The first session, *"International Aspects of OR History and Education: Cooperation – Coordination – Communication"*, showed research results from education initiatives in Brazil, Germany and Italy. The second session, *"International Outreach and Implicit Expectations in OR"*, started with *Jakob Krarup's "Extending the boundaries of IFORS"* (please see article on page 21). With his presentation on *Pro Bono OR* (see related article on page 18), Rand, reported on a recent initiative of the British Operational Research Society which provides an opportunity for third sector organisations, particularly charities, to receive free OR advice.


▲ Ulrike Reisach


▲ Dorien DeTombe

He showed some best practice examples of such OR support in the UK (crime stoppers) and Uganda (street children) - carried out by OR professionals. He not only dealt with the successes but also the difficulties encountered by the initiative. He described the rigorous matching process for projects and volunteers and appealed to OR practitioners to engage in such projects - to let charities benefit from scientific approaches and maybe also to foster OR knowledge, application and learning in such contexts.

With her contribution *Discovering and Dealing with Intercultural Issues in Operational Research*, Reisach emphasized that despite globalization, differences in the way problems are perceived and decisions are taken will remain. They are connected with different framework conditions like nature, history, society, and policy influencing people's socialization and thus convictions and behavior but, at the same time, being continuously shaped by human values, beliefs and actions. Different cultural patterns have an impact on how OR is done and perceived, on the way people are defining and dealing with problems, how they communicate with each other and reach decisions in order to master public and business challenges. Those variations over time and place keep OR agile and provide opportunities for mutual learning and inspirations for generations to come.

Presentations in the stream have inspired a special issue of the Central European Journal of Operations Research (CJOR) edited by Ulrike Leopold-Wildburger. Guest editors Ulrike Reisach, Dorien DeTombe and Gerhard-Wilhelm Weber of this Special Issue on International Aspects of OR are inviting contributions. Details can be found at http://ifors.org/web/central-european-journal-of-operations-research-special-issue-on-international-aspects-of-or/.

IFORS 2014 Barcelona: Some Reflections on the OR Practice stream

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The aim of this stream was not only to present *technical solutions* to the problems addressed but also the *consultancy* process which led to the results being implemented by the client. Ideally practitioners are the richest source of consultancy projects but few are supported to attend conferences outside their own country. However, some academics carry out consultancy based on their research expertise and many collaborate with industrial partners so as to introduce innovative methods – for example the 'math-in' network described below. Some key lessons that are relevant to successful collaboration emerged from the presentations and these are summarised below. In addition, one of the organisers (Ranyard) presented a paper, based on a previously reported survey of global OR practice, which examined the gap between OR research and the needs of practitioners and also the influence on OR practice of Problem Structuring Methods (enabling a wider range of problems to be tackled) and Business Analytics (which overlaps with OR and is now widely used in organisations).

Some Key Lessons for Successful Industrial Collaboration. The presenters recommended involving top management and as many stakeholders as possible in any OR study; agreeing on Key Performance Indicators; providing intermediate reports; exploring a representative sub set for very large problems initially; and identifying the resources required for implementation. (Note that some further tips on becoming an effective consultant are contained in an article in the June 2014 issue of IFORS News.)

Some Key Results from Research into the Changing Scope of OR Practice. The gap between research and practice persists and is detrimental to the future of OR. Possible remedial actions include ensuring that conferences promote practice and encouraging researchers to collaborate with industrial partners in addressing real world problems. Ways of encouraging potential industrial partners to participate need to be explored. Problem Structuring Methods have successfully extended the scope of OR to tackle problems with conflicting objectives and multiple stakeholders but usage across the world is patchy and limited training is available. The rapid growth of Business Analytics poses threats to and opportunities for the OR community. INFORMS and the UK Society are addressing this challenge by organising conference streams, meetings, publications and professional qualifications aimed at attracting the Analytics community.

The presentations in the stream, organized by J. Ranyard and Sue Merchant, are presented in brief below. The paper by John Ranyard, Robert Fildes on **Learning from OR Practice** include the main points above.

Optimizing Collection Routes for Recycling Bottle Banks in Belgium (Jeroen Belien, Philippe De Bruecker, Simon De Jaeger, Liesje De Boeck) Bottle banks are emptied and the bottles taken to a recycling centre by trucks working to a predetermined programme. In this inventory routing study, optimum static collection routes were determined which enabled collection costs to be significantly lowered by reducing the number of trucks required and the truck/driver working hours. In addition it was demonstrated that further cost-effective savings could be made if fill level sensors were installed in bottle bank containers as this would enable optimum dynamic routes to be generated on a daily basis. These new methods are now being introduced.

Bottle Bank Study - typical bottle banks

Bottle Bank Study – emptying banks for transportation to recycling centre

Optimal IT Helpdesk Locations and Workforce Schedules in the Turkish Textile Industry (Sila Halulu, Engin Bayturk, Fadime Üney-Yüksektepe) The biggest textile store chain in Turkey had problems providing IT support to stores in 17 countries across 7 time zones from a single location. As a result of this study, 3 locations were selected to provide a more effective service and optimum worker schedules were devised for each location.

A Predictive Analytics Approach for Demand Forecasting in the German Process Industry (Benjamin Priese, Robert Blackburn, Kristina Lurz, Rainer Göb, Inga-Lena Darkow) Anticipating demand changes is critical for companies such as BASF, which deals in oil, gas and chemical processes, that require high plant capacity utilization. The team developed a new predictive analytics approach coupled with sophisticated information technology, which enabled the combination of company data and relevant product sector economic information to provide improved demand forecasts. This new integrated approach significantly outperforms statistical approaches based on historical demand data alone.

Simulation Tools for Railway Planning in Spain (Ricardo Garcia-Rodenas, Jose Luis Espinosa-Aranda) This work presented the experience of the collaboration between several Spanish universities and RENFE (the main Spanish railway provider) in developing improved methods for the robust planning and management of railway transport in case of emergencies. Whilst the research objectives were achieved and the new methods showed clear improvements compared to current ones, they were not implemented by the railway company because of inter-organisational conflict. Studies by Members of the Math-In Network. The math-in network aims to transfer mathematical innovation to the productive sectors of society. In Spain 37 research groups and many industrial clients are involved but the network is international and a monthly newsletter is circulated to all members – see: www.math-in.net

Spanish Gas Transport Network Simulation and Optimization (Ángel Manuel González Rueda, Alfredo Bermúdez, Julio González-Díaz, Francisco José González-Diéguez) The aim of this project was to develop methods to simulate and optimize the gas transportation network used by a natural gas supplier, so as to minimise the costs of distribution whilst ensuring security of supply. A decision support system was developed which includes a user-friendly graphical user interface and initial trials are showing significant savings compared to current methods.

Logistic Report on the Location of an Agricultural Processing Plant in Spain (María José Ginzo Villamayor, Julio González-Díaz, Balbina Casas-Méndez) Wood ash produced by the wood industry can be treated and then reused as organic fertiliser. The problem addressed here was to find the location of Biocen's treatment plant, which minimised the costs of transporting the wood ash from the producers and also the costs of transporting the processed fertiliser to customers. The problem was solved by using the Weitzfeld algorithm.

Computing Stoichiometric Matrices in Chemical Reactions. A MINLP Problem (Emilio Carrizosa, Rafael Blanquero, M. Asuncion Jimenez-Cordero, Boglárka G.-Tóth) The aim is to determine the coefficients of a stoichiometric matrix in an important industrial chemical process so that the concentrations in a series of reactions give a best-possible fit to empirical concentrations. Finding the best fit amounts to solving an MINLP, in which nonlinear differential equations appear in the constraints. A heuristic was developed and shown to give good results when tested on benchmark data sets.

Final thoughts. OR practice is extremely successful where it exists but generally OR has a low profile and low penetration in many organisations that would benefit from its use. Problem Structuring Methods have extended the scope of OR and every opportunity should be taken to publicise them, offer training opportunities and develop them to be even more accessible by a wider audience.

Business Analytics, both the term and the associated methods, are already well known at board and senior management level and pose threats to and opportunities for OR which must be addressed vigorously, such as by the actions of INFORMS and the UK Society. The likely result of failure to respond to these challenges is the increasing marginalisation of OR in organisations and universities.

The original pioneers of OR aimed to solve real problems in the real world – just as the analytics community is doing so successfully at present – so it is important to remind researchers of this and to help them understand better how to encourage the use of their innovations in the real world. To this end, we propose that conference organisers strive to attract case study papers and that presenters of such papers include an explanation of the client interaction process that led to implementation of the recommendations, together with the technical aspects of their work.

Gas Transport Network Study –network with optimisation

Gas Transport Network without optimisation

(In these pictures the compressor stations are labeled with paddles, with the pink ones being active. The amount of gas supplied by each entry point of the network (mainly regasification plants) is also shown.

Looking Forward to Years of Service with the Help of IFORS

▲ SMIO pioneers meet in 2011

For a four-year old, the Mexican Society of Operations Research (Sociedad Mexicana de Investigaciones de Operaciones - SMIO) is a thriving organization driven by its firm belief that decision making in the public and private sectors can directly benefit from the tools and methodologies of OR and Scientific Management. Since 2011, SMIO has continuously worked on reaching practitioners in industry and government and disseminating OR methods and techniques to universities by organizing workshops and conferences on diverse topics.

At present, the Society has around 200 members, composed of mainly of higher education professors and a sprinkling of practitioners who have served as executives in the private and public sectors.

SMIO has conducted 3 national conferences that link OR solutions to current economic and social issues faced by the country. The Society's main event of the year, the conference is organized annually in the fall at different venues across the country. It is the perfect venue for the OR community to come together and share ideas and experiences, present OR-related work in progress, receive feedback, and enjoy the various social activities. These conferences consistently attract a growing number of participants who submit their works in applied and basic research. A significant number of presentations by students have become a feature of the conference each year, ranging from masters to PhD levels.

SMIO is also active in the international community, having organized the:

- IV International Workshop on Knowledge Discovery, Knowledge Management and Decision Support (EUREKA 2013), Mazatlan, November 6-8, 2013 and the:
- XVII Latin-Iberian-American Conference on Operations Research (CLAIO), Monterrey, October 6-10, 2014.

The XVII CLAIO/III CSMIO 2014, included the seventh Meeting of the Iberian-American Network on Multi-Criteria Decision Analysis (Red-M) and a cluster of sessions on Soft Computing and Hybrid Systems, organized by the Eureka International Network. SMIO is also organizing the upcoming International Conference on Operations Research for Development (ICORD) in 2016.

Looking back, it can be said that the organization has grown stronger and even more determined to develop, improve, share, and make widely known, the methods and applications of OR as well as related initiatives to help its use to benefit society. SMIO ardently believes that OR tools and techniques can contribute greatly to the solutions of problems in the developing world and that there are a lot of Mexican researchers and practitioners who possess the required OR skills and abilities to do this work. Looking ahead, SMIO will continue its efforts to work for a better future for the whole developing world through OR, assisted as it is now by the international OR community of IFORS, to which it now belongs.

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International Federation of Operational Research Societies