

Editorial

The IFORS family is scattered across the entire global and this newsletter illustrates that very visibly. The contribution from one of the IFORS executive members focuses on the activities of ALIO, the IFORS grouping of OR societies from 11 Latin-American as well as 2 European OR societies. ALIO was established in 1982 with the sole purpose of promoting operations research in this region and to deepen the relationships between researchers, or academics, and practitioners from the various countries within ALIO. Many activities are on the go but there are also continuous efforts to improve and increase these within ALIO.

With the next IFORS conference taking place in Melbourne, Australia it is possibly appropriate to start wetting the appetite of people to make sure they attend this conference. A short article on the establishment and history of the Australian Society for Operations Research (ASOR) is contained in this edition. Having been established formally on 1 January 1972 ASOR is also celebrating its 20th conference later this year. Moving to Europe the Austrian Operations Research Society celebrated its 30th anniversary in November 2008. This was a special occasion for the society and the celebrations were used to strengthen the close ties that already exists with its neighbouring OR societies. Along these same lines there is a short report on activities of the Operations Research Society of Eastern Africa (ORSEA). This society is a young society consisting of a number of East African countries namely Kenya, Tanzania, Uganda, Rwanda and Burundi. ORSEA is however not yet a member of IFORS.

There are two feature articles: The first one describes the Bariloche Model which is an attempt to develop a Latin American World Model very much along the same lines as the Limits to Growth Model. The second article is about the Wine Supply Chain Council and initiative that started a couple of years ago, yes you guessed it, after the consumption of a number of bottles of some lovely wine. Some Operations Researchers from the USA, Chile and South Africa thought it maybe a good idea to do some research that could benefit the wine supply chains of their respective countries. The council has grown with Australia and New Zealand joining and also Argentina.

IFORS has introduced some innovative things on there re-designed website. There are opportunities for IFORS members to be heard around specific topics while the website invites members to indicate when they are travelling so as to let there colleagues in the IFORS community know.

As always there is news on a number of conferences that will take place in the foreseeable future.

In the previous newsletter there is a very interesting article by Prof Michel Balinski. I have to apologise to Prof Balinski, there were a number of mistakes in his article in the first version of the newsletter. These were corrected and the newsletter that can be accessed from the IFORS website is the corrected one.

Let me extend my normal invitation for news and articles for the newsletter. Please feel free to send me something or to volunteer to write an article or short report that will interest the IFORS community.

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The 5th International Operations Research of Eastern Africa Conference will be held in Dar Es Salaam - Tanzania. See page 12 for more info.



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ALIO

THE ASSOCIATION OF LATIN-IBERO-AMERICAN OPERATIONS RESEARCH SOCIETIES

ALIO, the Association of Latin-Ibero-American Operations Research Societies, was created in Rio de Janeiro in 1982, with the purpose of promoting the exchange of experiences and information among researchers, academicians and practitioners working on Operations Research in the region, and foment the use of techniques and methodologies related to this discipline. The main goals include to contribute, establish, and deepen ties between researchers and practitioners of countries within ALIO, and to help young undergraduate and graduate students in their professional development.

Andrés Weintraub from Chile, Hugo Scolnic from Argentina, and Nelson Maculan and Roberto Diégues Galvão from Brazil were the founders of ALIO. Since its creation, ALIO has grown and accomplished many things. The main tools that ALIO uses to achieve its goals are the CLAIO (Latin-Ibero-American Congress on Operations Research) and the ELAVIO (Latin American Summer School of Operations Research). The CLAIO is a biannual event held in different Latin American cities. It is aimed to all OR community: researchers, academicians, practitioners, graduate and undergraduate students. IFORS contributes to this event paying the expenses of a distinguished lecturer. The ELAVIO (Latin American Summer School of Operations Research) is an annual event also held in different Latin American cities. It is aimed to young scholars from Latin America and, more recently, from other parts of the world. At the meeting, the participants have the opportunity to present and discuss their work. IFORS contributes to this event providing financial support and a scholarship for a young scholar.

The great challenge for ALIO in the beginning was to maintain the regularity of these events mainly because of the very limited amount of financial resources and the relatively small size of the OR community in the region. The events continued to be carried out due to the efforts of a group of researchers that dedicated their valuable time to this task, and despite of the several organized societies that flourished and co-opted many of our OR members. Nowadays, we have a much better situation. The growth and strength of OR in the region can be observed by looking at the number of participants of the past CLAIO, held in Colombia in 2008. In that event we had more than 600 papers presented describing practical and theoretical activities of OR in different regions of Latin America. At the present moment 11 Latin-American Societies and 2 European Societies are members of ALIO: Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Mexico, Peru, Portugal, Spain, Uruguay and Venezuela.

ALIO established cooperation with other associations around the world. For instance, young scholars from Canada, Europe and Developing Countries can attend the ELAVIO, following agreements with CORS, EURO and IFORS, and young scholars from Latin America can attend the ESI, the EURO Summer Institute; the ALIO/EURO Workshops in Combinatorial Optimization that have been held once every three years in Europe and in Latin America. ALIO activities have had an

extraordinary impact on the teaching, research and postgraduate activities in the region. Many fruitful collaborative works between researchers of different countries are being increasingly observed.

We must thank Andrés, Hugo, Nelson and Roberto for what we have achieved today in the region. Their contribution has been invaluable. They had a key participation in all major accomplishments of ALIO. Sadly, Roberto Diégues Galvão passed away last year. It is a great loss for ALIO and for the OR community. We all miss him.

We must keep on trying to contribute to the excellent work they have done. Although ALIO has already accomplished many things, we still have a long way to go.

What else ALIO and IFORS can do to promote OR in the region? What other actions can we take? We must have in mind that we are in a region composed entirely by developing countries. We certainly have to invest a lot in human resources, particularly, young scholars.

With the growth and level of maturity of the OR community in the region, it is natural now for ALIO to think about creating and/or formalizing working groups as in EURO. Working Groups can provide additional opportunities for its members to exchange ideas and experiences promoting joint research works.

ALIO and IFORS could promote OR in Latin America by carrying events, workshops, short courses and/or tutorials for OR Trainers. For better results, a pro-active attitude of ALIO and IFORS would be to contact national societies or OR groups, offering to carry short courses of tutorials for free. A counter part of the society or group could be asked, for instance, to provide the necessary and adequate facilities and infrastructure for the event and to guarantee a minimum attendance of OR trainers. ALIO has made efforts to create organized societies in Latin America countries. At each event and at every opportunity that arises, people from such Latin American countries have been contacted and the idea of getting organized and formalizing a society to promote the OR in their countries is discussed. Although attracted by the idea, these people were not able to accomplish much due to the lack of financial support. So, for Latin America countries that do not have an organized OR or related society, this forum would also serve as an excellent opportunity where they could gather together to discuss and start to organize themselves into societies.

ALIO and IFORS should open more opportunities for professional development of young scholars. For instance, young scholars have little chances in Latin America of getting financial support to attend international events. We suggest, hence, that ALIO or its member societies could sponsor their attendance by promoting a young scholar paper competition based on results of their thesis or master dissertation. The prize of the competition would be a scholarship for the finalists to attend and present their papers at the CLAIO. In a similar fashion, IFORS could promote a young scholar competition providing a scholarship for the finalists to present their papers at the IFORS Triennial Conferences. Perhaps we could have two paper finalists from each regional area indicated by ALIO, EURO, NORAM and APORS.

It would be important that ALIO and IFORS act politically in governmental agencies, organizations and other foundations in Latin American and other parts of the world convincing them to finance initiatives that promote the exchange of researchers in Latin America, foment the formation of human resources providing scholarships and to promote the participation in joint projects. A very good governmental initiative already exists in the Latin American region from more developed countries relatively to others in the region. This must be strengthened and, certainly, any support of other developed countries to this initiative is very much welcome.

Many of the proposals presented above are not new. They have been suggested along these years by other colleagues from ALIO. Some could be implemented right away and other initiatives could be planned if ALIO had funds to spend. This is another difficulty that prevents ALIO to be more active in promoting OR in the region. ALIO has no source of income. Should ALIO consider the possibility of getting and managing money? How ALIO can get some income? ALIO's society members maintain themselves with a tight budget; a similar situation is observed with the CLAIO events. So, what can be done? This is a challenging situation that we must face and try to respond.

More details about ALIO activities and news can be seen, in Spanish and in English at <http://www.dc.uba.ar/alio>

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Operations Research in AUSTRALIA and the Foundation of ASOR

Operations Research was initially stimulated in Australia as a result of practitioners within the private and public enterprises which either had links to similar groups in parent organizations overseas or connections to such groups which had successfully used OR in making processes more efficient.

The Australian economy and culture in the 1950s and 1960s were very strongly influenced by Britain and the US and these were natural sources for this practice. OR groups existed within public enterprises like railways and airlines where scheduling issues were critical and in the business sector also: some companies which were influential included Ford, ICI, Lysaghts, BHP, National Mutual Insurance and Shell. In Melbourne and Sydney, practitioners set up local OR groups in the 1960s and this pattern was repeated in other major urban centres including those smaller cities Wollongong and Newcastle which had substantial industry. Informal links between the Melbourne and Sydney groups led to the establishment of the Australian Joint Council for Operational Research (AJCOR). In November, 1971 at a national conference of the local chapters, a constitution was ratified and the Australian Society for Operations Research was born on January 1 1972. Despite the loss of OR groups in the economic downturn of 1973, the new organization flourished with an increasing academic component as time progressed and the university sector expanded in Australia. Industry groups were still very influential right through to the 1980s when many disappeared – partly through their own success. OR procedures became standardized and other groups commonly implemented them (an example would be in mixing algorithms in petrochemical works). Many OR group leaders went on to management roles and this may have paradoxically reduced the momentum and power of their OR groups. When Ian Sadler was national president, he launched a national newsletter to establish communication between Chapters – this eventually became the ASOR Bulletin.

In 1975 there was a proposal from Dr Bruce Craven in the Melbourne Chapter for ASOR to join with IFORS which was carried out. When IFORS established its regional groups Australia joined APORS, and Prof Santosh Kumar was later on a President of this group. With the establishment of APORS the national OR journals of New Zealand and Singapore were merged to form the Asian Pacific Journal for Operations Research (APJORS) and ASOR took this on as part of ASOR membership. At present there is continuing lively and unresolved debate on the issue of establishing a national OR journal.

RECENT HISTORY

My own direct recollections of ASOR date back to 1990 when I joined the ASOR committee in the Melbourne chapter while working as a lecturer in operations research and mathematics at Swinburne University of Technology. It was during an economic slowdown again and at this time the formal OR groups at both Shell and National Mutual were both wound up and dispersed. This disappointing echo of the previous economic downturn led to most OR practice in the country being done either by consulting or by practitioners with new titles. However, The Commonwealth Scientific and Industrial research Organization (CSIRO) saw growth in its OR division at this time and this group has been fairly stable in the interim. There were still some formal OR practitioners within the railways and airlines but OR became increasingly identified with academia and ASOR itself reflected that change. It was not possible to maintain the practice of alternating the chapter chair between academia and the practitioner sector. OR courses remained in force for



▲ Patrick Tobin, Chair of the IFORS 2011 organising committee.

another decade before several universities (including Swinburne) saw fit to discontinue these. OR is presently taught in subjects at various universities in Victoria but not as its own degree as existed previously. This situation seems the same in all state chapters of ASOR.

Despite this gloomy development, OR itself still thrives in various ways. In the private and public sector OR practice continues with practitioners operating under many new names and the need for quantitative problem solving never diminishes. Many real and important problems are addressed in the mining and resources sector, within transport and communications and increasingly within the service sector including the medical community.

ASOR has a stable membership particularly within the Victorian and Queensland branches and holds its national conference every two years. The Victorian chapter is the largest branch and hosted the APORS conference in Melbourne in 1997. This successful conference also embedded both national conferences of ASOR and the Operations Research Society of New Zealand (ORSNZ) and reminds us of the natural links that ASOR and its sister society ORSNZ have developed over time. ASOR in Melbourne also holds an annual one day conference on recent advances in OR and has fostered student research through student conferences. One of its stars was Alan Farley who was the winner of the ASOR student prize and later became a finalist in the Edelman Award from ORSA, with work in the area of cutting stock algorithms.

In 1996 it was decided to establish an Institute for Operations Research as an adjunct to ASOR with a brief to run workshops and tutorial sessions on specific OR themes and these were very successful. In addition to raising awareness on aspects of OR like network programming and constraint programming these helped raise funds to support activities like student attendance at national conferences and successful the bid in 2007 for IFORS 2011.

ASOR itself sponsored the publication of a book on Recent Advances in OR edited by Professor Santosh Kumar (who later went to Zimbabwe for a time to teach OR there) and many other local practitioners have produced important books on various fields such as Professor Moshe Sniedovich on Dynamic Programming. Both Moshe and Santosh have served extensively as ASOR committee members and chairmen. >>



In the 1990s it was decided to honour some of the main contributors to OR in Australia with a national OR medal later named the Ren Potts award. (Ren Potts was a leading researcher in Traffic Flow and later in other areas of OR, and was also very active in the formation and ongoing function of ASOR. He served as one of the first national presidents.) The first very worthy recipients of this medal were Dr Bruce Craven, Prof Charles Pierce and Professor Jerzy Filar.

Many OR researchers in Australia have made important contributions to the field. For example former ASOR committee members, Professor Natasha Boland in networks and Professor Andrew Eberhard in mathematical programming and nonsmooth optimization are making important contributions in the theory in their areas in the country just as Dr Danny Ralph has in mathematical programming as an émigré overseas. Regular interchange of ideas and research between local people and the overseas OR community is an ongoing feature of the field. A stream of international visitors and immigrants has fed local academic areas in various fields – a notable arrival in recent years being Professor John Hearne from South Africa who heads the mathematics section at RMIT and still works in OR on wildlife resource management practice.

There are many fine OR practitioners with strong industry links such as Prof Erhan Kazan in Brisbane with his work in transport and Prof Lou Cacetta in Perth who has produced extensive work for the mining industry. Indeed these are just a few of the OR community members making strong impact locally and overseas. Practical issues in all areas of OR are addressed by our active researchers from CSIRO and the Defence Science and Technology Organization (DSTO) as well as those in university linked groups. The range of problems recently addressed by these groups includes stockpile mixing, transport management and machine operation and selection in the mining sector, scheduling problems, coastal surveillance and 'soft' OR issues in the defence sector. ASOR recently supported a local conference in Melbourne on use of OR in radiation therapy control. The Mathematics in Industry Study Groups (MISG) held each year have provided many opportunities for OR practitioners to advertise their skills to the rest of the mathematical fraternity and help maintain that natural link which was reinforced in 2003 when ASOR embedded its national conference within the International Conference on Industrial and Applied Mathematics held in Sydney.

The coming IFORS conference in Melbourne in 2011 will give local OR practitioners, academics, students and supporters an opportunity to showcase their work and welcome the OR community of the world to drive home the message that OR is an important tool in handling many real world problems and particularly the pressing problems involved in balancing sustainable resource development with safe and effective environmental planning.

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From the IFORS Webmaster

An Invitation to Be Heard

(By this time, your national society representative would have received the password to enter the "Members Only Area" of the IFORS website (www.ifors.org). Depending on your National Society policies, such password could be made available to the membership in general, to designated members, or upon request. If lost, such passwords can be obtained from the webmaster@ifors.org upon approval of your listed representative/officer.)

This is an invitation for our IFORS members to let us know what you think, most specially on the issues brought to you for voting.

In the IFORS website (www.ifors.org), go to the Member's Only area and click on "Cast your Vote". You will be shown the pending items for decision, which at the time of this writing, include: the proposal to amend the IFORS By Laws; the vote on the application for membership of the "Asociación Uruguaya de Informática e Investigación Operativa" (Informatics and Operational Research Uruguayan Association); and approval of General Meeting Minutes of IFORS 2005 and IFORS 2008.

Should you have questions, reservations, clarifications, comments, and remarks, you are most welcome to enter the Discussion Board and type in your opinions for other members to see and react to. These comments are preferably related to the items up for a vote, but suggestions for projects and constructive ideas that will make IFORS more responsive to the needs of its stakeholders are also welcome. As in all forums such as these, members are asked to observe proper decorum and netiquette.

We will await your visit!

Are you Travelling? Let the OR Community Know!

IFORS is pleased to announce that the IFORS website facility on Who's Travelling OR Experts Database is now fully functional.

This project is premised on the assumption that a greater availability of information will maximize benefits gained from the trips of IFORS - affiliated speakers, especially to developing countries. It is well-known that sponsorships to finance trips of resource speakers are hard to come by for organizations in developing countries. At the same time, OR professionals who have scheduled trips to these places may be open to the opportunity of meeting with other organizations and people in order to further share their expertise and benefit from the exchanges.

The Database is aimed at providing information that will enable the matching of the resource with the demand for experts.

How does it work?

This data base, highlighting opportunities and requirements for OR travelling professionals is made available to the IFORS community through its website. Access to this information is restricted to member societies through the use of user ids and passwords.

Upon a successful sign-in, the user is given the option to either view or enter information into the Database. He/she is then given the option to access the Speaker or the Requests Database.

General information on the date, time and conference/nature of visit by the professional are gathered. On the other hand, the request for the expert will require such information as the nature of assistance needed, exact location, qualifications of the expert and maximum financial assistance available, among others.

IFORS is hopeful that this facility will help link up the people who need the expertise with the experts who have the time to give it in the course of their travels. IFORS invites you to use it.



The Bariloche Model: a historical personal perspective

Hugo D. Scolnik

The idea of developing a Latin American World Model arose as a reaction against the message conveyed by the Limits to Growth Model. Its message was that there must be limits for mankind due to the scarcity of non-renewable natural resources, but without discussing the huge inequalities in, for instance, how those resources are being consumed or dilapidated in the world. Concepts like distribution of income, the arms race, etc, were simply not taken into account. As Hayward Alker, a political scientist from the MIT wrote: the Forrester-Meadows model reflects the ideology of the USA affluent suburbanites.

From a political viewpoint, the message of the Forrester-Meadows sort of models was absolutely unacceptable for the Third World countries. If the planet was heading toward a catastrophe because of the scarcity of non-renewable resources, increasing pollution, practically unbounded growth of the population, etc, their "unique" proposal was to freeze economic development. Some of the implications and underlying assumptions were clear:

1. Poor should remain poor because no further economic growth was feasible.
2. The unfair distribution of income and power was untouchable, and not even discussed. Therefore, to halt economic growth implied that most human beings must be condemned to try to survive in miserable conditions.
3. What it was fairly distributed was the responsibility for the depletion of resources, etc, hiding the obvious fact that per capita consumption differs wildly between industrialized and Third World nations.

Needless to say, the whole socio-economic and political approach had to be challenged from the perspective of the so-called "developing countries". Although some of the previous points were more than enough for questioning the models, it was also important to put in evidence not only their ideological weaknesses but also the technical ones. The reasons for discussing these points should be clear: in order to develop a reliable global model, all sectors (demography, energy, food, environment, etc.) must be seriously studied and formalized. Global models are dynamic in the sense that they try to explain the time evolution of a set of variables, and the interaction of its submodels leads to very complicated technical problems. For instance, the model itself can be compared to a chain that can be even weaker than its weakest link. This means that each one of the relations connecting the variables must be fully justified from a scientific viewpoint, and that the tendency of "closing gaps" by intuition or heuristic unreliable decisions should be carefully avoided.

Another important aspect was the gullibility of the general public who read headlines of the sort "Computer predicts a catastrophe". To question a model it is necessary to build an alternative one, since most people may consider that the refutation of something which looks as a seriously formalized scientific work should be done on equal grounds.

These were considerations, which led to the development of the Bariloche model. Fortunately, the results were so encouraging in terms of having a tool able to be applied to different countries and problems like the effects of the arm race or the feasibility of achieving the Lima targets, that the whole effort was really worthwhile. As somebody said: more important than a model is the process of modeling, because the formalization effort is a fantastic interdisciplinary educational tool for the involved specialists.

Before continuing, it seems convenient to clarify some points from the epistemological viewpoint (see Loiseau I., Ruiz C. and Scolnik H.D., et al, Answering the 6th IASA Global Modeling Conference questionnaire in the book "Groping in the dark" edited by G. Bruckmann, D. Meadows and J. Richardson, J. Wiley, 1982.). A global model is a structured discourse composed of two main parts: the theoretical model and the formal model. The theoretical model is structured from the theoretical framework in which the global model is imbedded through an "ad hoc" theoretization effort. Later on, a homology is assumed to exist between the theoretical model and reality. It is therefore a discourse about reality and as such, it necessarily reflects, explicitly or implicitly, the ideology of the authors. For instance, the very choice of variables for explaining a given phenomenon is a consequence of the underlying vision of the world. A classical example was the Cambridge controversy related to the use of production functions. If one assumes that the production in a given sector is a function of capital and labor, and that they can be interchanged within certain limits by choosing the technology to be used, then production function, which depends only of capital, cannot be used. In the Bariloche model, all production functions were of the Cobb-Douglas type, which involve

capital, labor, and technological progress.

We will discuss in the following some important facts concerning the World3 project.

The mistakes and wrong assumptions were evident for serious scientists. Due to the fact that most technical aspects of the World3 model had serious flaws, it is impossible to discuss all of them in a short article. Therefore, we will just mention a few in detail, which constituted essential factors for leading to doomsday predictions:

1. They confused the known oil reserves with the physical existence of it. Since exploration has a cost, the search for oil follows a cost-benefit equation. This means that if a government or company knows that in a certain region there are reserves for covering the needs of say the next 10-20 years, no further exploration actions are undertaken until the necessity arises. Therefore, the known oil reserves cannot be confused with the total existence of this non-renewable resource in the planet.

In fact during several decades the known oil reserves increased in spite of the higher consumption. Current estimates can be found in <http://www.eia.doe.gov/emeu/iea/table81.html>.

In <http://www.enviroliteracy.org/article.php/280.html> the following remark is of interest for our purposes:

Estimating world oil reserves is not a simple task. Reserves are known sources of oil that are extractable given current technologies at current prices. Oil resources, on the other hand, include many sources that are not currently being exploited because it is not yet cost effective to do so.

An excerpt from Russia: due to the decrease in the exploration volume that started in 1992 the growth in oil reserves does not compensate oil production. In the period from 1992 to 2000 the average annual growth in oil reserves was 245m tons compared to 1.105bn tons in the period from 1985 to 1991. >>



While in China (<http://edition.cnn.com/2003/BUSINESS/07/28/china.petrochina.reut/>)

China's largest oil and gas producer PetroChina made a dozen oil discoveries in the first half of 2003. The company made 12 crude oil finds and seven natural gas discoveries in the first six months, adding 252 million tons or about 17 percent to its proven oil reserves,

Also current literature fully endorses the position the Bariloche team had on the energy "crisis". For instance in <http://www.vheadline.com/readnews.asp?id=9946>

The following comments and data are very illuminating:

Current oil demand extends down from 25.6 barrels/capita/year (bpy) for the USA to well below 0.2 bpy in rural areas of low-income developing countries (LDCs). The world average, which fell slowly for around 15 years through 1978-93, is about 4.5 bpy. While it is totally impossible that this could happen, the world's current 6.3 Bn population consuming oil at US per capita rates would generate a demand of around 445 Million barrels/day (Mbd). At the other extreme, at 0.2 bpy world total oil demand would be telescoped to less than 3.5 Mbd. The 4.5 bpy world average is around one-third the average in European Union countries, and more than 4 times that of India, or China – which will soon become the world's biggest industrial economy. Annual increase of the world's population (which is continuing to fall as a percentage rate, and in absolute numbers) is now running at about 85 Million. At the world average of 4.5 bpy this itself generates a 'latent' or potential growth in world oil demand of about 1.06 Mbd annual, assuming no change in the energy economy, no fuel substitution, and also no economic growth.

In the same article the mentioned inequalities have the following updated figures:

COUNTRY/REGION BPY	WORLD DEMAND AT THIS RATE
USA 25.6	445 Mbd
Rural areas, LDCs 0.2	3.45 Mbd
Real world 4.5	78 Mbd

- Forrester and Meadows had such confusion, and the effects of this were a key factor in their models.
- The World3 model excluded political dynamics and its treatment of economics as a single world system obviated the need to represent trade. But the data corresponding to international trade clearly reflects the prevailing power structure.

For instance the following 1970 data shows the effects on the Third World countries of the international trade:

REGION	BALANCE OF PAYMENTS IN MILLIONS OF 1970 DOLLARS	% OF 1970 GNP
Industrialized countries	13.215	0.635
Latin America	-3.757	3.15
Africa	-4.618	9.05
Asia	-5.347	2.42

Source: Information obtained by the author using the International Labor Office database in Geneva; also published in the book Herrera, A. O., Scolnik, H. D., Chichilnisky, G., Gallopin, G. C., Hardoy, J. E., Mosovich, D., Oteiza, E., Brest, G. L. de R., Suarez, C. E., & Talavera, L., Catastrophe or New Society? A Latin American World Model. Ottawa: International Development Research Centre, 1976.

The above data shows how financial resources flow continuously to the industrialized world, seriously affecting the poor countries since the negative balance of payments is a high proportion of their GNP.

Technically speaking, the World 3 model was plagued by misconceptions, wrong interpretation of data, and non-validated assumptions and equations. Furthermore, the planet was conceived as a deterministic rocket fired in 1900 without any feedback mechanisms. Time ago we proved that the model was extremely unstable, and that modifying the initial data of the year 1900 by less than 5%, it predicted a happily growing population without any disasters in its time horizon. After knowing this result, the authors modified the model to get back a doomsday projection.

The concept of stability is essential in mathematical modeling. Intuitively speaking, the predictions of a model should not change much if the initial data is modified within reasonable error bounds. In the case of the Forrester-Meadows models, the key prediction was that the population was going to decline sharply around the year 2051. If the models were stable, such a prediction should remain valid even if some of the initial data corresponding to year 1900 is changed a little (needless to say, even nowadays national data in most countries is affected by serious errors). The above-mentioned study showed that the World3 model was absolutely unreliable.

Of course, it is possible to adopt a different point of view. After having found that slight changes in some of the variables were enough for avoiding the catastrophe, those very same findings could have been used for defining a policy. However, the World3 authors after getting acquainted with those findings modified the model in order to get back the doomsday result.

This instability was not exclusive of the World3 model; it is in the very heart of the Systems Dynamic methodology developed by

Jay Forrester. In other words, every model built with this approach must be unstable, and therefore cannot be trusted for decision-making purposes. Technically speaking, professor R. Kalman proved (personal communication) that the technical framework of the so-called System Dynamics is equivalent to integrate a non-linear differential equation whose degree is equal to the number of sectors. For instance World3 has five sectors, and therefore is equivalent to a fifth degree differential equation. Needless to say, the classical theory on the subject shows that this sort of equation is extremely unstable. This means that it is impossible to build up stable models with such an approach.

THE BEGINNING OF THE BARILOCHE MODEL

Although presenting an alternative to the World3 model motivated the origin of the Bariloche model, it is necessary to mention some previous literature on world problems.

The long-term global forecastings started in the 1960s and gave contradictory views of the future. H. Kahn's *The Year 2000- A Framework for Speculation on the Next Thirty Years*, published in 1967, presented an optimistic view of the future, based essentially in assuming the continuity of the world's main factors.

The other prevailing position at that time was basically neo-Malthusian, and instead of predicting a future of unending progress, sustained that mankind was heading towards an unavoidable catastrophe. This position was reflected for instance in publications like A. and P. Ehrlich (*Population Resources and Environment*, 1970, and *The Population Bomb*, 1971), J. Forrester (*World Dynamics*, 1971) and Dennis Meadows et al (*The Limits to Growth*, 1972).

The Bariloche Model was designed from the very beginning by an interdisciplinary team with the purpose of studying the feasibility of arriving at a different world. The first step was to define "human basic needs", in terms of life expectancy, calories and protein consumption, housing, education, etc. The international bureaucracy soon incorporated those concepts as if they were their invention.

At this point it seems important to discuss if there is any difference between projective and normative models. The first class projects the future as an extrapolation of current data and structures, and simulates alternatives of the control variables (those that can be manipulated within certain limits by means of economic or political decisions, like for instance interest rates, exchange rates, allocation of national budgets to different sectors, etc.). Normally, several alternatives are simulated and the "best" is chosen. Ideologically speaking, what is considered "best" is the key factor.

On the other hand, a normative model defines a desirable future and seeks for alternatives, which may lead to accomplish those targets. However, to extrapolate present structures is in itself an ideological position, and therefore any projective model is a normative one because it postulates that the world will continue essentially as it is. >>



The Bariloche model was normative – just to use the normal categorization - and used the current data at the time of its development, not for projecting the future, but for studying the feasibility of arriving at the goals perceived as essential for mankind in different regions of the world.

Some of the key ideas were revolutionary, like for instance to leave aside the classical approach of the economists of maximizing the GNP, replacing it by life expectancy at birth.

If the goal is simply to increase the GNP, it is obvious that to manufacture weapons is much more effective than to provide education or health services. Unfortunately, most economists receive their education in universities, which do not seem to encourage independent critical thinking, and much less to consider the social implications of their neoliberal paradigms. The results can be seen throughout the world.

There are many examples of countries whose socio-economic indicators vary dramatically although their GNPs are alike. It is obvious that an indicator as the GNP per capita hides the real distribution of income, and therefore the feasibility or not for a percentage of the population of satisfying their minimal needs.

Only those countries where human basic needs are satisfied have high life expectancy. On the other hand, life expectancy is a good indirect indicator of the distribution of income because for instance a person can accumulate fortunes but cannot intake an unbounded amount of calories. In many regions, and particularly in the Third World, the ruling class achieves standards of living comparable to those of the richest countries, while a high proportion of the population lives below the line of poverty, suffering from ill-nutrition, health problems, etc.

The following table gives data corresponding to 1960 in different regions:

REGION	LIFE EXPECTANCY	INFANT MORTALITY	POPULATION GROWTH RATE IN %
Industrialized	69.2	26.6	1.3 countries
Latin America	55.8	115	2.8
Africa	43.4	196	2.6
Asia	48.6	148	2.4

The mathematical formalization of the model led to a non-classical approach to Economics, because the target was – as we said before - not to maximize an indicator as the GNP, but life expectancy. In other words, the model was a goal seeking one, and took into account a number of non-linear constraints. Besides the obvious ones arising from the capital and labor available in each region in a given moment, the idea was that the population endorses a development policy if and only if each human being perceives that his basic indicators are continuously improving. This is an important point because one alternative is to increase investment dramatically at the price of decreasing consumption, aiming at achieving very high rates of economic growth in the future. The practical implication is that in such a case the current population should sacrifice their standard of living for the sake of future generations. We considered that other alternatives were much more likely to be accepted, and in fact the computer implementation of the model allowed users to define and study different policy variations and to see their effects.

Those considerations were reflected in the constraints. The model runs using optimization techniques applied to its dynamics, its main goal being to reach the seek targets in minimum time. An interactive version which was developed for UNESCO, allowed the user to modify in a hierarchical way policies, priorities, etc., and has been used for training economists and policy makers.

The Bariloche Model was especially careful in justifying every piece of data and every equation. For instance, the relationship linking natality and life expectancy with education, distribution of labor in the different sectors, the demographic structure, and other indicators was finally formalized as a set of coupled non-linear equations whose parameters were obtained using data from practically all countries during different decades. This effort demanded five years, using data banks, non-linear techniques, etc.

An interesting byproduct was to link educational levels to demography. In many models education is an “add on” which is included because it must be there, but without clear links to other variables. If this is the case, then education

has no reason to be developed because there are no links with other sectors. Of course some authors made efforts to connect educational levels with technological progress

One of the most impressive efforts to formalize the role of education was due to the Austrian economist J. Millendorfer with whom we have had extremely interesting meetings.

Quoting: <http://www.professorenforum.de/volumes/v01n02/artikel3/hanssm.htm>

...that the most comprehensive and impressive piece of relevant empirical research is due to the Austrian systems analyst Millendorfer. I very much regret that his work has not

received the amount of attention in the technical community that in my opinion it deserves.

Millendorfer set out to develop a “generalized production function” which would be able to explain the economic output of the different regions of the world. In a worldwide cross-sectional analysis he collected numerous data in order to estimate the production function econometrically. Output was measured by per capita income. Input variables included, of course, the classical inputs of labor and capital, but others as well. Millendorfer and his team were not successful in estimating a satisfactory Cobb-Douglas production function based on the two classical inputs. Its explanatory value for per capita income was low, the unexplained variance quite high. In the process of searching for additional explanatory variables he finally hit upon the role of education. He developed an index of the level of education and introduced it as an “immaterial” input factor in addition to the “material” factors of labor and capital. This resulted in an extremely high explanatory value of the “generalized production function”. After these results had been achieved at the end of the sixties, later investigations have shown that the explanatory value and statistical significance continue to be extremely high.

The final form of the generalized production function may be stated as follows:

$$(1) y = c m^{1/4} e^b [0.5 (m^{1/4}/e^b)^{-b} + 0.5 (e^b/m^{1/4})^{-b}] + 0.8 q$$

where

- y = per capita income
- m = per capita capital stock (measured by energy indicators)
- b = level of education (measured by a special index)
- q = exploitation of underground resources (special index)

Unfortunately Millendorfer’s findings had not been included in any version of the Bariloche model, but they were seriously considered for future research. The main target would have been to formalize the variation of the technological progress coefficients in the Cobb-Douglas production functions.

One interesting outcome of the initial project was to link the Bariloche Model to the one developed by W.Leontieff in which his very well known input-output economic techniques were generalized to take into account physical quantities, including pollution. For that project we used the Bariloche model for obtaining optimal policies for different regions, and the Leontieff model for evaluating in detail the corresponding impacts on the environment, etc. One important result was that for Africa it is impossible to reach an acceptable level of the satisfaction of the basic needs if the current distribution of income is kept unchanged. On the other hand, if such a distribution is improved, then the goals are reachable in a reasonable time horizon. For every other region similar results hold in the sense that a redistribution of income shortens sharply the time required for reaching acceptable goals.

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This work has been published in Hopkins M., and Scolnik H.D, Basic Needs, Growth and Redistribution: A Quantitative Approach, International Labour Office, Background Papers of the World Employment Conference, Vol I, pp.9-50, Geneva, 1976.

An interesting topic is the results given by the demographic model, which was particularly interesting. In general, the demographic pyramid is known in each country divided into cohorts. That is to say, the number of males and females in each group of ages is known. Having that information, if natality (number of alive born children per 1000 inhabitants) and life expectancy are given, then the dynamics of the population is quite a simple accounting process.

One of the outstanding features of the Bariloche model was its capacity for predicting the natality and life expectancy values as functions of indicators like educational levels, calorie and protein consumption, urbanization level, percentage of women employed in the secondary sector of the economy, etc. The demographic submodel gave practically perfect results for all countries of the world, and it was extremely interesting to see the dynamics of the population in different regions. As expected, the developed countries reached very fast equilibrium because when life expectancy increases, the proportion of old people goes up, and also does the mortality measured as a percentage of the whole population. After a while, the increased mortality leads to a higher proportion of young people and therefore natality goes up. The final outcome is that there appears a sort of cyclical behavior, which leads to oscillations around zero growth.

The lesson was clear: if the conditions of living are improved, the population tends to zero growth without additional measures. For instance, if the proposed policies were implemented in Latin America, the model predicted a population growth rate for the year 2020 of only 0.89%.

CONCLUSIONS

The Bariloche model contributed to modify the way of thinking in relation to socio-economic development. The introduction of human basic needs spread out and international organizations and governments are currently using this sort of indicators. In particular India included in its Constitution this concept.

I was a witness that those concepts were explained by the first time in Bariloche by C.Mallman, E.Oteiza, J.Sábato, and other social scientists, after having attended a meeting organized by the Club of Rome for presenting the first draft of the Limits to Growth model. At that time the idea of using different indicators for measuring quality of life started to be elaborated by different scientists, and therefore it is difficult to assign proper credits to a concept which arose from a sort of cross fertilization discussions.

However, an author who joined the Bariloche team much later claimed that it was her invention (<http://www.p-i-r.com/pdfs/papers/187.pdf>).

From a conceptual and technical viewpoint, the development of dynamic goal seeking models is a fascinating and very rewarding endeavor. They teach a lot about the dynamics of socio-economic systems, and constitute irreplaceable tools for training decision makers.

Perhaps the most important lesson was that mathematical techniques should be used as a supporting tool of desirable policies to study for instance if they are feasible in a given society, and if the postulated goals can be reached taken into account the existing constraints. Serious models do not replace human judgment, but they can provide unbiased support for the design and implementation of development policies.

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Wine Supply Chains: From the grape to glass

Wine is a very differentiated and sensitive product that moves along global and non-integrated supply chains. The Wine Supply Chain Council (WSCC) was formed by the Supply Chain and Logistics Institute at Georgia Institute of Technology in the US, the Council for Scientific and Industrial Research (CSIR) in South Africa, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Australia, the Pontificia Universidad Católica de Chile in Chile, and the Universidad Nacional de Cuyo in Argentina. The mission of the WSCC is to lead research towards building lean supply chains for wines (see more in www.scl.gatech.edu/wsccl).



▲ **Members of the Wine Supply Chain Council that attended the meeting in Australia - they are from left to right: Leorey Marquez (CSIRO), Simon Dunstall (CSIRO), Esbeth van Dyk (CSIR), John Bartholdi (Georgia Tech), Don Ratliff (Georgia Tech), Andreas Ernst (CSIRO), George Nemhauser (Georgia Tech), Alejandro Mac Cawley (Cath Univ Chile / Georgia Tech), David Ryan (Univ Auckland), Rodolfo Garcia-Flores (CSIRO), Kike Forradellas (UNCuyo)**

By “lean supply chain” we mean the concepts first introduced in the Toyota production system, as applied to supply chains: (1) Management of variability, (2) Elimination of waste, (3) Synchronization and alignment (4) Continuous improvement. Variability affects the SC because process time variability is propagated downstream where it is realized as either stockouts or else safety stocks, both of which are additional expenses. WSCC also works to eliminate waste in the form of double handling, such as moving wine among tanks, repacking bottles, or re-palletizing cartons. It can be hard to align and synchronize wine supply chains because production is a push system following agricultural rhythms, while consumption is a pull system with its own, different seasonalities. Long lead times add to the complexity: From the moment vines are planted until full production typically requires 4 years; and production depends on unforeseeable factors such as weather. Furthermore, many of the markets for alcohol are regulated in complex and arbitrary ways. Such factors create dilemmas all along the supply chain. For example, in such an environment, should the winery make-to-stock or make-to-order? Or should it produce unlabeled bottles for later customization? Finally, there must be continuous improvement with continual review and evaluation of the supply chain performance as a whole, and not just the independent enterprises along the chain. And the supply chain must look ahead to new challenges, such as carbon-based costs, or a reorganization of the current 3-tier distribution system in the US.

The WSCC has focused first on studying two types of variability in the wine SC: The first is a variability that directly affects quality of the delivered product: the temperatures to which the wine is subject during transportation from origin to destination. We are also studying variability is the time it takes from the moment an importer issues a purchase order to the winery until to the time the wine arrives at the importer's.

Wine is sensitive to temperature, yet it is shipped mostly in non-refrigerated containers. There is little information regarding the temperature profiles to which the containers are subject. Thus the first research project has been to document the temperature of cartons of wine from different origins (Australia, Argentina, Chile and South Africa) to the United States. For doing so we are using data loggers [1] that record data, time, and temperature every two hours. The devices are placed in cartons of wine being transported from the winery, and afterwards are collected from the importer, distributor, retailer, or final customer in the US. We also track the containers so that we can correlate positional information with the history of temperatures. As a result of this project, we are putting together a view, unprecedented in scale and scope, of the timing and conditions of the global supply chains for wine.

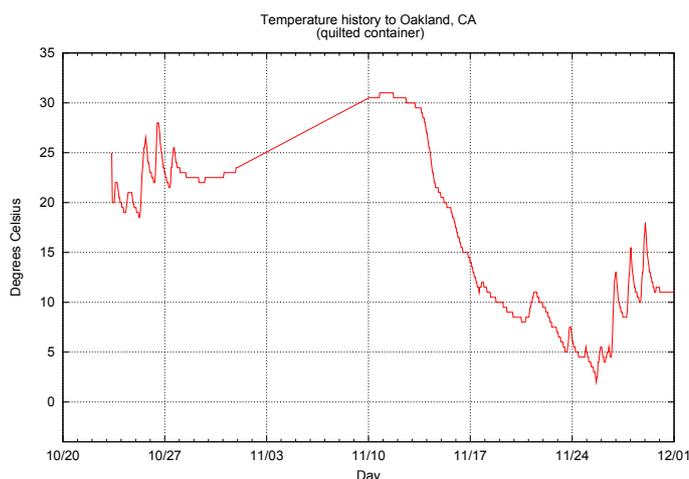


The project has continued for two years and so far we have received back over 130 devices with temperature recordings of 5 different origins and over 8 major shipping routes (Figure 1).



Figure 1: Some of the shipping routes being tracked

Wine is best stored at temperatures between 10 and 20 °C (50 and 68 °F); but a wine will not sustain mayor damage between 5 and 25 °C (40 and 77 °F). In general, wine that is kept over 20 °C (68 °F) will age twice as fast and with less complexity of flavor than if kept at optimal conditions [2]. Extremes of temperature are not the only way wine can be damaged; rapidly changing temperatures can force the cork to move like a piston, drawing in air and then breathing it out, which allows the wine to oxidize. Both risks are recognizable in Graph 1, which shows a temperature history of typical shape: The daily spikes in temperature while the container waits at the port to be loaded, where it is exposed to the sun. The temperature is less variable when the container is aboard ship and surrounded by other containers. Note that the smooth portion of the graph rises as the ship approaches the equator, then the temperature drops as the ship enters the winter of the opposite hemisphere. Finally, there are again daily spikes in temperature as the container sits in the port before pick up. The waiting at both the origin and destination ports is mostly due, we have determined, to congestion.



Graph 1: A history of temperatures within a shipping container

Another interesting issue in the wine SC is the order cycle time; that is, the time elapsed from when the order is sent to the producer until the product arrives to the importer. This time includes that required to fulfill the order by the winery, the time it takes to consolidate the shipment (fill the container with other orders), as well as the time to transport the container to its destination.

We have tracked order cycle times for importers on the east and on the west coasts of the US and it is clear that order cycle time is not much correlated with physical distance. Some countries just seem to be faster, and more reliably so, at preparing wine for shipment. We are now documenting the detail how the processes in each wine-producing country contribute to order cycle times.

Yet another challenge is to get wine through the highly idiosyncratic 3-tier US distribution system, which is the subject of yet another project, to be reported on in the future [3,4].

All of these issues and much more, are currently part of the ongoing research by the Wine Supply Chain Council. Over the next year, we intend to add new members in New Zealand and then Europe and also to track shipments into the UK. We have recently begun tracking shipments of sake from Japan, and, having established our processes, we have even begun tracking some international shipments of fresh produce and fish.

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Austrian OR Society (OEGOR) 30th Anniversary meeting 7 November 2008

The Austrian Society of Operations Research held its 30th Anniversary Meeting on 7 November 2008 in Vienna, Austria. The purpose of this special meeting was to strengthen links with neighbouring OR societies and EURO. Thanks to our sponsors, we were able to invite delegates from these "neighbouring" OR societies including Switzerland, Germany, Czech, Slovakia, Hungary, Slovenia, and Croatia. We were also very successful in continuing work on our joint Central European Journal of Operations Research (Springer).



The morning started with anniversary speeches of the first board members including:

**Prof. Dr. Peter Harhammer -
Technical University of Vienna**



**Prof. Gustav Feichtinger -
Technical University of Vienna**



**Dr. Georg Urbanski - AUA
(retired), Vienna, Austria**



**Dr. Alfred Kalliauer, Verbund
Vienna, Austria**



Prof. Stefan Pickl from the German OR Society awarded Prof. Gustav Feichtinger Honorary Membership of the German OR Society:



Prof Feichtinger also awarded Honorary Membership of the Austrian OR Society to Prof Marion Rauner on the same day:



The Austrian Society honored Dr. Ronald Hochreiter, University of Vienna for web support:



Afterwards we had a plenary speech from Prof. Lüthi from the ETH Zürich, Switzerland:



An award ceremony for the Bank Austria Prize for Operations Research 2008 for talented young researchers was scheduled just before lunch time:

BANK AUSTRIA PREIS 2008 FÜR OPERATIONS RESEARCH

- *Dr. Verena Schmid, Dissertation*
Trucks in Movement: Hybridization of Exact Approaches and Variable Neighborhood Search for the Delivery of Ready-Mixed Concrete



- *Mag. Peter Reiter, Diplomarbeit*
The Next Release Problem: An extended model formulation and the comparison of two algorithms for stochastic multi-objective combinatorial optimization problems



ÖGOR PREIS 2008 FÜR OPERATIONS RESEARCH

- *Dr. Ieyasu Sugimoto, Dissertation*
Disruption Management in Aircraft Departure Sequencing – Optimization Methods for Efficient Scheduling



- *Paul Holzweber, Diplomarbeit*
Stability of Climate Coalitions: A numerical approach using the CWS model

In the afternoon “neighbouring” societies gave short presentations including:

Prof. Luka Neralić
(Croatian OR Society)



Prof. Petr Fiala and Prof. Josef Jablonsky
(Czech OR Society)



Prof. Stefan Pickl, German GOR Society
(German OR Society)



Prof. Tibor Csendes
(Hungarian OR Society)



Prof. Zlatica Ivanicova
(Slovakian OR Society)



Prof. Paul Stähly
(Swiss OR Society)



Finally Austrian top researchers, from different fields of Operations Research, presented their current research work. First, Prof. Franz Rendl from the University of Klagenfurt gave a talk about semi-definite programming to solve interger problems. Next, Prof. Ulrike Leopold-Wildburger from the University of Graz analyzed whether expectations in economics are rational or limited from an experimental economics angle and then Prof. Richard Hartl from the University of Vienna spoke about Operation Research methods in transportation.

Further information on the meeting can be found at our web-site: <http://www.oegor.at/oegor.php?oegor=section,1;subsection,44>

Prof Dr Marion Rauner, University of Vienna
Marion.rauner@univie.ac.at ■



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OPERATIONS RESEARCH SOCIETY OF EASTERN AFRICA

1. Past Years Activities - for the last 5 years, ORSEA has hosted successful international conference, which have addressed key themes and sub-themes affecting the continent. The attached write-up provides a detailed outline of the previous conferences.
2. Present Activities - presently, we are planning the 5th ORSEA Annual International Conference this July at University of Dar-es-Salaam - Business School. We have an Executive Committee meeting on February 21, 2009 and we shall provide the details on the theme, sub-themes and the dates after this meeting.
3. Planned Activities - some of the planned activities include incorporating Rwanda and Burundi Chapters into ORSEA so that we have a real Eastern Africa organization. This we intend to accomplish in 2009. The second activity is to involve more faculty from ORSEA for external moderation within our institutions. The third activity involves engaging faculty staff in exchange programs where one staff can teach in another institution for a period ranging from six months to one year. Moreover, we intend to start visits by faculty staff to other departments within our institutions, for example, the Department of Management Science - Makerere Business School will be visiting Department of Management Science - School of Business University of Nairobi in early March 2009. Starting 2010, we intend also to start exchange program for OR students within the various departments of OR.

PAST THEMES AND SUB-THEMES

1. FIRST CONFERENCE

Theme:

Applications of Operations Research/ Management Science in Development and the Potentials for Africa

Sub-Themes:

- (i) Development and Operations Research;
- (ii) Decision Theory;
- (iii) Simulation and Modeling;
- (iv) ICT-Networks and Small and Medium Enterprises;
- (v) Action Research and OR;
- (vi) Applications of Operations Research in the Public Sector; and
- (vii) Operations and Productivity Management.

Dates: September 17 to 19, 2003
Location: Nairobi - Kenya
Host: School of Business – University of Nairobi

2. SECOND CONFERENCE

Theme:

Operations Research/Management Science and the Challenges of Globalization

Sub-Themes:

- (i) Software Development and Applications in OR/MS;
- (ii) OR/MS Effective Performance Measurement and Management;
- (iii) OR/MS Potentials for Poverty Eradication;
- (iv) OR/MS Challenges of Development in the African Context;
- (v) OR/MS Applications in Business Management;
- (vi) OR/MS and Information Management in Developing Countries;
- (vii) OR/MS for Human Resource Management and Globalization;
- (viii) Recent Development in OR/MS; and
- (ix) OR/MS in the Management of HIV/ AIDS Programmes.

Dates: November 17 to 19, 2004

Location: Dar-es-Salaam - Tanzania

Host: Business School – Dar-es-Salaam

3. THIRD CONFERENCE

Theme:

Application of Operations Research in Economic Development and Poverty Reduction

Sub-Themes:

- (i) Resource Optimization;
- (ii) Modeling and Experiences in Infrastructural Planning and Development;
- (iii) Intervention in Micro, Small and Medium Enterprises;
- (iv) Financial System Development;
- (v) Risk Management;

(vi) Quality Improvement in the Service Sector: Health, Tourism, and Education;

(vii) OR in Sustainable Environmental Management: Environmental Degradation, Drought, Waste Management and Pollution; and

(viii) OR and Business Development.

Dates: August 4 to 6, 2006

Location: Entebbe – Uganda

Host: Makerere University Business School

4. FOURTH CONFERENCE

Theme:

The Role of Operations Research in Public and Private Sector Management

Sub-Themes:

- (i) Health Care Management;
- (ii) Urban Transportation Management;
- (iii) Security/Conflict Management;
- (iv) Education Management;
- (v) Environment and Natural Resources Management;
- (vi) Financial Services Management;
- (vii) Agriculture and Veterinary Services Management;
- (viii) Infrastructure Development;
- (ix) Disaster Management;
- (x) Operations Management and Supply Chain Management; and
- (xi) Software/Modelware for OR.

Dates: October 23 to 24, 2008

Location: Nairobi - Kenya

Host: School of Business – University of Nairobi

Dr. Gituro Wainaina,
University of Nairobi, Kenya

wainainagituro@yahoo.com



The 5th International Operations Research of Eastern Africa Conference

www.udbs.udsm.ac.tz/orsea



Call for Papers

Operations Research Society of Eastern Africa (ORSEA) wishes to invite all operations researchers, trainers, academicians, practitioners, and students interested in and/or using any of the branches of operations research to participate at the conference and to present papers. The conference will be held in Dar es Salaam, Tanzania on 16th and 17th July 2009. The conference is organized by the ORSEA in collaboration with the University of Dar es Salaam Business School.- Tanzania.

ORSEA aims at promoting the development of Operations Research in the Eastern Africa region. Currently, the society has three country chapters: Kenya, Tanzania and Uganda. Efforts are underway to include Rwanda, as another country chapter.

Theme

OR in Emerging Economies

Sub themes

1. Supply chain management
2. OR tools in total quality management
3. Aggregate planning in the dynamic environment
4. Labour mobility and HR planning, demand and supply forecasting
5. Globalization in competing environment (cultural evolution, pluralism, governance, ICT, contract negotiations,)
6. Foreign Direct Investment
7. International Accounting systems
8. Research Collaboration
9. OR and financial markets
10. Agricultural produce and world trade
11. Outsourcing Operations
12. Global contract negotiations

Language

The conference will be conducted in English. Therefore, abstracts and papers should be written in English.

Important Dates

1. 30th April, 2009
Deadline for submission of abstracts.
Submission of full paper is encouraged.
2. 30th May 2009
Full Papers Submission.
3. 30th June 2009
Deadline for confirmation of attendance.

Submission of Abstracts/papers

Abstracts and papers should be submitted in MS Word or PDF format as e-mail attachments to orsea@udbs.udsm.ac.tz. The abstracts should not be more than 150 words long.

Registration

The registration fee for the conference is US\$ 200 inclusive of refreshments and lunch for the 2 days and conference materials.

Venue & Accommodation

The conference will be held at the White Sand Hotel. It is situated 20 km from City Centre Dar es Salaam and 23 Km from the Mwalimu Nyerere International Airport.

Accommodation will be available at the conference venue at an additional cost.

Transport

Delegates will have to make their own travel arrangements to Dar es Salaam – Tanzania. Conference organisers will arrange to receive all delegates at the airport or bus terminal upon prior receipt of travel arrangements. Further details will be communicated through invitation letters.

Organizing Committee

- Dr. Marcellina M. Chijoriga - Chairperson
- Dr. Ulingeta O. Mbamba - Secretary
- Dr. Benjamin Mutagwaba - Member
- Dr. Ester Ishengoma - Member
- Dr. A. Mushi – Member
- Ms. Jane Mgaya

Additional Activities

Excursion to either Zanzibar or Bagamoyo

Conference Dinner, Dance and cultural entertainment, again at additional cost

Information

All enquiries about the conference and applications for waiver and/or support for registration fees and accommodation should be sent to the Secretary, Conference Organizing Committee at the following e-mail address: orsea@udbs.udsm.ac.tz

Previous Conferences

To date, the society has successfully organized four conferences. The first conference was hosted by the Kenya Chapter in September 2003 at the Kenya College of Communications Technology.

<http://www.business.uonbi.ac.ke/orsea>

The Tanzania Chapter hosted the second conference in November 2006 at the Golden Tulip Hotel <http://www.tanzaniaports.com/orda1/>

The third conference was held in Uganda in August 2006, hosted by the Uganda Chapter at the Imperial Beach Resort.

<http://www.mubs.ac.ug/old/orsea.php>

The 4th International Operations Research of Eastern Africa Conference, hosted by Kenya Chapter at Utalii College Nairobi (was on Operations Research in Public and Private Sector Management). <http://www.business.uonbi.ac.ke/orsea>

The conferences have benefited from the generous support of the Association of Operations Research Societies of Europe (EURO), the International Federation of Operations Research Societies (IFORS), the Tanzanian Harbours Authority, The Faculty of Commerce and Management, University of Dar es Salaam, The School of Business, University of Nairobi and the Makerere University Business School (MUBS) – Uganda

Sponsors

- University of Dar es Salaam Business School,
- School of Business University of Nairobi,
- Makerere University Business School and
- Rwanda University

ORSEA Officials

- Chairman – Prof Isaac M Mbeche
- Vice Chairperson – Dr Marcellina Chijoriga
- Vice Chairman – Prof. W. Balunywa
- Secretary General – Dr Gituro Wainaina
- Organisation Secretary – Prof E. S. Kaijage
- Treasurer – Dr. Isaac Nkote
- Country Rep- Kenya – Mr. J. Kenduiwo
- Country Rep –Uganda –Mr. Musa Moya
- Country Rep- Tanzania- Dr. Mbamba
- Conference Organizing Committee

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Doctoral programmes and Conferences:

The University of Avignon, France, (<http://www.univ-avignon.fr>) funds various programs to receive foreign researchers at the doctoral or postdoctoral level as well as established researchers. In particular, we look for candidates in Operations Research and combinatorial optimization.

Candidates will be received at the Laboratoire d'Informatique d'Avignon (<http://www.lia.univ-avignon.fr/>) where they will be part of the Operational Research and Optimization team. They must therefore have skills in operations research and combinatorial optimization in a broad sense, and specifically have expertise in at least one of the following areas: integer programming, constraint programming, stochastic programming or robust programming. They have developed (or will be able to develop) applications in scheduling, vehicles routing, networks, etc.

Perdiguier program for doctoral students: Doctoral students must stay in Avignon a minimum of 3 months and will receive a lump sum of 1,500 Euros. This allowance should be considered as a complementary to other funding (grant of the country of origin, funding for international exchange, etc.).

Post-doc

Post-doctoral fellows will be paid about 1950 Euros per month for 12 months. Their visit will begin in September or October 2009 for one year and they must hold a PhD from a foreign university.

Visiting researchers

They must stay at least one month, and their stay will end before 31 August 2009. They will be paid according to their curriculum vitae.

Doctoral students, post-docs and researchers in combinatorial optimization interested in staying at the University of Avignon or visiting should contact:

Dominique Quadri (dominique.quadri@univ-avignon.fr) or
Philippe Michelon (philippe.michelon@univ-avignon.fr).

Contact person

Dominique Quadri

Maître de conférences

Laboratoire Informatique d'Avignon (LIA)

Université d'Avignon et des Pays du Vaucluse

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Agroparc BP 1228

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FRANCE

14th Belgian-French-German Conference on Optimization -BFG 2009

September 14-18, 2009, Leuven, Belgium

Special Topic: Optimization in Engineering

<http://www.kuleuven.be/bfg09>

The conference is the 14th of the series of French-German meetings which started in Oberwolfach in 1980. This time, it is organized jointly with Belgian optimizers, and takes place in Belgium's oldest university town, Leuven, in the heart of Europe, close to Brussels. The conference will consist of invited plenary, invited mini-symposium and regular talks as well as poster sessions.

The topics of the conference will include the following:

- continuous optimization (smooth and non-smooth)
- numerical methods for mathematical programming
- optimal control and calculus of variations
- robust optimization
- mixed integer optimization
- optimization with PDE
- differential inclusions and set-valued analysis
- stochastic optimization
- multi-criteria optimization
- optimization techniques for industrial applications

Several sessions will be dedicated to this year's special topic, "optimization in engineering". Leuven is an ancient university town in the center of Belgium, 14 minutes from Brussels airport. Its university, the "Katholieke Universiteit Leuven" is the oldest university of Belgium, founded in 1425 (it shares this heritage with its French speaking sister university, "Université Catholique de Louvain"). The conference will take place in the historical university buildings of the "Maria Theresia College" right in the middle of the old town of Leuven.

- Abstract submission: 15 April 2009
- Notification of acceptance: 1 June 2009
- Poster submission: 1 June 2009
- Early registration fee: 1 July 2009
- Late registration fee: 1 August 2009
- Conference: 14 to 18 September 2009

The conference is organized by OPTEC, the "Optimization in Engineering Center" of K.U. Leuven. For the most current information on the BFG09, see <http://www.kuleuven.be/bfg09> or email to bfg09@esat.kuleuven.be

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