

# Bulletin

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Special issue devoted to EURO-k conferences and to EURO Summer and Winter Institutes

Edited by Zilla Sinuany-Stern and Philippe Van Asbroeck



# Some strategic issues for EURO

At the last EURO-Conference, in Budapest, the presidents and the delegates of the National OR Societies were invited by the Executive Committee to participate in a brainstorming on the strong and the weak points of the OR-activities in Europe. The debate, which was introduced by six panellists (R. Burkard, D. De Werra, M. Pidd, C. Schneeweiss, R. Slowinski and R. Tadei), was very constructive and allowed the Executive Committee to fix some priorities for the future development of EURO. The main arguments presented during the debate and some of the projects of the E.C. are presented here.

## The nature of Operational Research

It is clear from the discussion that very different cultures exist in O.R. Some colleagues consider that the European (or at least the continental) O.R. should be much more pragmatic and is overwhelmed with optimisation problems. Others are of the opinion that the use of sophisticated theory is necessary to guarantee a high quality level of research. Moreover, due to the development of technologies, new problems (and new jobs) appear which have strong connections with OR (database management, e-commerce, distributed co-operative systems, ...).

Operational Research is an interdisciplinary field: this is a source of difficulty but also of richness. Everybody should try to respect this diversity and to promote the dialogue between the different cultures.

## Communication within EURO

The structure of our organization (rather heterogeneous federation of National Societies) does not promote the communication between researchers, societies and the EURO-organization. This aspect will be the main priority of the Executive Committee for the next two years. Concretely, we intend to develop the EURO Web Site in order to offer a strong link for exchange to the different actors of the European O.R.: researchers, professors, students, national societies, working groups, O.R. departments, companies and practitioners, editors, libraries, conference organizers, EURO Executive Committee and Council, other O.R. organisations, ...

In particular, the following service will be proposed to the members of the national societies:

- directories,
- discussion rooms on OR problems and applications,
- personal pages,
- promotional files for OR,
- course notes and solved exercises,
- offers and demands for research, educational or industrial collaborations,
- offers and demands for jobs in OR,
- information on conferences, publications, research programmes, call for tenders, grants, ...
- EURO-list for free discussions and announcements,
- EURO thesaurus of OR units and research engine by theme, country, ...

The site should become the main instrument used by the Operational Researchers to communicate with their colleagues, to obtain information and to promote their activities.

## Publications

During the discussion in Budapest, some criticisms about EJOR were recalled, in particular the excessive price due to the very large number of published papers, sometimes to the detriment of the scientific level. The new editors have explained their strategy to significantly improve the quality of the journal. Moreover, discussions will start in the next weeks between the EURO E.C., the editors and the publisher in order to propose a less expensive solution to the members of the national societies, to develop the electronic availability of EJOR and to study the possibility of proposing a professional journal to the European researchers.

EURO is at a crucial step in terms of publications and particularly relatively to EJOR. Each of us is concerned by the evolution of this important journal. This means that each referee should be conscious of the importance of his task and avoid superficial analysis of the proposed papers. This also means that every leader in OR should encourage his colleagues and collaborators to submit their best papers giving priority to EJOR, in order to develop and promote the European O.R., and to give it official acknowledgment by the international institutions.

## Initiatives of young people

There was a consensus in the discussion on the fact that the EURO (Winter) Summer Institutes is probably the best instrument of EURO for the promotion of O.R. The creation of networks of young researchers in the best way to stimulate the development of a real European area of research in O.R. A new instrument, curiously called ORP<sup>3</sup>, was adopted by the Council in Budapest and will be tested in 2001. Its purpose is to favour exchanges between Ph.D. students from different countries and cultures and to prepare them for future responsibilities in organizing scientific meetings and conferences.

Interested people can consult <http://www.orp3.com>  
This instrument will replace the "Young OR Conferences" which were not successful and were skipped by the Council. It was also decided in Budapest to help young people financially for their participation in the working groups, which are, for the moment, the main opportunities for experts to exchange information on a specific topic.

Finally, the EURO Web Site (see point 1) will also help young researchers by giving them the possibility to discuss with senior researchers, to consult surveys and tutorials or to download advanced courses on their topics.

## Conclusion

**Communication within EURO, publication policy and support of young researchers** will be the three main priorities of the Executive Committee for the next two years. Other subjects mentioned during the debate will certainly be on the Committee's menu : continuous education, support to developing countries, contacts with the EEC are some examples of them. In the framework of the communication within EURO, we are open to discussion: please do not hesitate to send us your constructive comments, remarks or suggestions.

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# Can a Small Society Organize EURO-k or ESWI?

Some OR societies are more active than others, at least for the two types of activities I chose to concentrate on in this Bulletin - EURO-k conferences and ESWI. Thus far, the United Kingdom and Belgium are the leading EURO organizers of these activities. We can explain the extent of their active participation by their large number of society members and by seniority. However, most often it is just a handful of people who take upon themselves the responsibility for organizing conferences and summer institutes.

A small society may indeed be reluctant to take upon itself the laborious and responsible task of organizing a EURO event. Nevertheless, based on my personal experience, I am convinced that this is a feasible venture and that even a large conference such as EURO-k can be organized by a small society. The most expedient way of doing this is to hire a commercial firm that specializes in this profession. These firms will travel to any country in Europe to organize a large conference.

Regarding the professional program, the Program Committee, who is chaired by a person from an outside country and who is an experienced organizer, is responsible for soliciting good speakers, sessions, etc. I also bring to your attention that the hosting society is eligible for a loan from EURO.

ESWI is a much smaller conference than EURO-k with less than thirty participants. Therefore, an ESWI conference is manageable by a small country.

The key to success is a handful of committed people!

**Zilla Sinuany-Stern**

	EURO-k	ESWI	Total Activity
Austria	1983	1996	2
Belgium	1975, 1998	1984, 1985	4
Bulgaria			0
Belarus			0
Croatia			0
Czech Republic			0
Denmark			0
Finland	1992	1987, 1999	3
France	1988	1994, 2001	3
Germany	1991	1993	2
Greece		1996	1
Hungary	2000		1
Iceland			0
Ireland			0
Israel	1995		1
Italy	1985	1991, 1997	3
Norway			0
Poland			0
Portugal	1986	1989	2
Slovak Republic			
South Africa			0
Spain	1997	1995	2
Sweden	1976	1992	2
Switzerland	1982	2000	2
The Netherlands	1979, 2001	1988	3
Turkey	2003		1
United Kingdom	1980, 1994	1986, 1995, 1998	5
Yugoslavia	1989		1

## Opening Address

### EURO XVII, Budapest, July 2000

2000 years of Christianity, 1000 years Hungarian statehood, and 25 years OR organized within the European Association of Operational Research Societies within IFORS, ladies and gentlemen, dear friends, welcome to EURO 2000, welcome to Budapest!

As a catchword of this conference, both committees, the organising and the programme committee, have chosen the theme 'OR for a united Europe'. Indeed, from a structural point of view, EURO is organised very similar to the European Union: Nations correspond to national societies, the European 'Council' coincides with our Council, and the European Commission as an executive body corresponds to our Executive Committee.

As a matter of fact, EURO is even some steps ahead the economic integration if one considers its membership. Hungary, e.g., has already been a member of EURO since 1983, and now almost 20 years later politics is following what has previously been established in OR. EURO is particularly encouraging politics to complete the historical project of a European integration. The location of this conference again emphasizes our wish that this eastern part of Central Europe may hopefully in the near future become a part of the European Union. We are most grateful that two high-ranked Hungarian politicians give us the honour of their presence.

Thus it is a pleasure for me to thank the Organisation Committee, particularly Prof. Andras Prekopa and the Programme Committee with its chairman Prof. Jakob Krarup for their efforts to promote Operations Research in Europe by making this conference a real success. Thanks are also due to the Hungarian OR Society with its President Prof. Tamas Rapsak for their kind invitation and to the Budapest University of Economics for its generous hospitality and, of course, to all public and private sponsors who have supported this important European congress on Operational Research.

Ladies and Gentlemen: 25 years ago EURO was bold enough to risk a clash with the new currency. This might create some trouble for EURO's financial system when we change, possibly after another 25 years, from Swiss Francs, which at present is our

interior currency, to EUROS. But this coincidence with the name may also have its positive aspects.

As you know, we have always difficulties to explain outsiders what Operations Research really is about. Now it is straightforward, you simply say OR is organised in Europe in EURO and this, as everybody now knows, has something to do with money. The only problem is that EURO's reputation might then be linked to the reputation of the EURO. So let's try to improve both, OR within EURO and the EURO within Europe. This conference is one means to this end.

Relating EURO, that is, the European Association of Operational Research Societies, to EURO as a currency is perhaps not that simple-minded as it might seem at first glance.

One might ask: If OR has to do with money, whose money is it we have actually in mind? If we think of the modern concept of the shareholder value as one of a company's most important performance measures, one might come into some disquieting thoughts. Obviously, a lot of our more applied models are constructed along with the preference structure which is ultimately dictated by the capital markets. Hence, in view of this situation, it is of importance not to adopt a narrow-minded medium term purely economic preference structure that primarily serves only part of the society.

In fact, it is a mistaken belief that Operations Research can avoid ethical questions. The following plenary lecture of Prof. J.P. Brans will point to this important issue.

Clearly, Operations Research is more than just a science that has to do with planning procedures following economic goals. The vision of OR has to be the society as a whole and, in particular, we should not only restrict ourselves to Europe but widen the view to other parts of the world. I am therefore very pleased to be able to welcome the IFORS President, Prof. Andres Weintraub, who started an initiative to promote OR in developing countries. EURO is going to support these ideas especially in view of its strong traditional relationship to Africa.

Ladies and Gentlemen, at the 25th anniversary of EURO, Operations Research is in a position which the very first pioneers of our science could only dream of. For the first time, Operations Research is going to be employed on a large scale. Numerous software and consulting companies are making use of advanced Operations Research procedures to solve highly important real world problems. More and more, software producers are implanting intelligent optimizing procedures in their already existing comprehensive transactional systems, and it is obvious that it is often not just the optimization itself which is of primary interest. In fact, it is rather the ability of an optimal procedure to provide a reasonable way of further automizing a system and to allow a participation of different stake holders.

World-wide, and particularly in Europe, we are in desperate need of adequately educated young people. Clearly, the entire IT sector is growing with breathtaking speed, but it is within this sector that a considerable amount of people is needed to incorporate intelligence in modern information technology. Think of optimal bidding procedures at electronic market places, of multi-agent systems possessing discretionary information, think of models to determine flexible working time schedules, think of supply chain software to optimize supply chain contracting, just to give a few examples.

For the first time, politics and the public are realizing the fundamental importance of our field. And since this is the case, one might ask whether our educational system is congruent with this situation. Apart from not too many exceptional cases, one must realize that in most of our universities, OR has not been able to gain a central position. Teaching and research in OR can usually be found in mathematics departments, engineering sciences, in business schools, in computer science departments, and in economics and statistics. In most of these areas, Operations Research plays only a very marginal role of an auxiliary science, and this has not only a consequence for the development of OR but it has also a very negative effect on the visibility of our field for the students to be recruited. Indeed, Operations Research contributes to the society a well-defined core competence, and it is of importance that in our educational systems this core competence must be visible and its acquisition must be appealing enough to attract and motivate young people.

Ladies and Gentlemen, let me dig a little deeper. Operations Research is an applied science. Its ultimate vision is to contribute to real world decision making. In doing so, OR relies on a cooperation with many different sciences. Regarding the solution of a real world problem, interdisciplinarity is indeed unavoidable, which, however, inherently creates problems for the visibility of a discipline within the educational system I just mentioned. Indeed, OR is multi-cultural, and this has nothing to do with the different educational systems of the many countries organized within EURO or IFORS, since these systems do not differ that much. Rather, this has to do with different intellectual training, with the traditions, and the value systems in the various disciplines that contribute to our field.

Indeed, we have, in the audience, mathematicians, engineers, management scientists, computer scientists, economists, statisticians, sociologists, and others. Operations Research needs each of us. Our different cultural background, however, creates problems that should be identified and should, at least to a large extent, be overcome.

Not too few of us have a clear and sometimes all too clear understanding of what OR really is or what it should be. Thus for some engineers, the analysis of logical properties of a solution procedure has nothing to do with OR but is just mathematics. These mathematicians are doing, at most, the wrong thing right. For some colleagues from the business schools, the engineers' solution of a machine-loading problem, for instance, is such a ridiculously low ranked problem nobody in a high position in a company is really caring for. For some mathematicians, just to bring up the rear, these management people talking about concepts are not doing really serious work. What does it mean, for instance, to cast a class of problems into a two-stage stochastic program without analysing its solution properties, and even worse, without checking feasibility at the second stage.

Thus there are problems of mutual understanding due to our divergent educational background. But this is not the complete story, the problem reaches far deeper. Everyone of us is living in her or his own home community in which one has to teach and in which research is evaluated. As long as we are in the main realm of that community and publish in journals being accepted at home, there is no problem. But problems might immediately arise if, in the best sense of OR, we are no longer following the main stream of our home culture.

To counteract these problems of a rather fuzzy appearance of our field which, as I have tried to show, is inherent in the very nature of Operations Research, one may take several measures.

Firstly, one can try, possibly with the help of politics, to transform the home community such that more than just one facet of OR is accepted and that OR as a large discipline is made really visible within the curricula. In fact, building intelligence into computer software needs a proper qualification and expertise that cannot be acquired within the usual syllabus of one of the adjacent sciences I just mentioned. Hence, hopefully, OR might gain, in an increasing number of places, the status of a well-established educational discipline possibly accompanied by a proper Master Programme.

Secondly, we as colleagues should be aware of this particular problem of everyone's home culture and should show tolerance without, however, giving up general scientific standards.

Thirdly, the contribution of OR in practice and particularly in the newly developed software should be made far more visible as it is the case right now. Already today, and this should be made far more transparent to the public, modern life, like the air traffic, would end up with chaos without the automatized decisions OR is providing.

Finally, and this is my closing remark, the OR community itself should be strengthened. In EURO we have developed a lot of instruments to foster and to shape the contours of our field. Think of the many conferences, the Summer/Winter Institutes, the Working Groups, and the Journal. A particular instrument may be seen in awarding prizes. EURO's highest award for a person's overall scientific achievement for Operations Research in Europe is the Gold Medal. This medal is a highly prestigious prize for someone who has not only substantially contributed to the research in OR but who has also strengthened the scientific institutions of Operations Research in Europe. Hence, it might happen that not on each occasion, the prize can be awarded. Unfortunately, this is the case today, which is among others due to the fact that some of the persons nominated by our member societies are still actively involved in EURO affairs and are therefore not eligible.

The decision of the jury, whose efforts deserve our full appreciation, this decision should not be considered a calamity, on the contrary, it shows that

not always persons can be presented that fulfill both ambitious criteria. These two criteria, however, are essential for EURO. It is important that colleagues with a high reputation in research commit some of their time to the institutions of our science and, on the other hand, a scientific organisation can, in the long run, not survive if it is managed by persons having only a very limited scientific standing. So, in effect, the decision of the Gold Medal Jury will strengthen EURO, and hence the OR community.

Generally, however, compared with other societies like INFORMS and in view of the situation of OR just analysed as being by no means in the center of their respective home community, it seems to me that we are not employing the instruments of awards enough. I am therefore delighted to announce a new prize. This award is called Management Science Strategic Innovation Prize. It is highly endowed, sponsored by a leading software house, and is meant to focus the interest of Operations Research on specific highly innovative areas of research possibly not yet being in the main stream of our endeavours. I will give more details elsewhere on another occasion. The only point I would like to mention here is the highly commendable fact that it was possible to bring the business world in our boat. In fact, one now seems to understand that it is the more than 10 000 individual OR scientists in Europe that are doing highly needed basic and applied research and that most of these scientists are responsible for the education in this rapidly growing field.

Ladies and Gentlemen, of course it is not only this new prize that is hoped to further strengthen our community, it is, as I mentioned before, all our instruments and particularly the large annual EURO-k conferences themselves. EURO 2000 will be an important event not only for our own scientific and personal advancement but for Operational Research in Europe as a whole. I wish you an effective and profitable time in this beautiful European country, in the charming capital of Hungary, and at the renowned Budapest University of Economics.

Thank you.

**Christoph Schneeweiss**



# 25th Anniversary Address EURO XVII, Budapest 2000

Ladies and Gentlemen, dear friends!

When we came together in Jerusalem 5 years ago to celebrate the 20th anniversary of the European Association of Operational Research Societies, a lot about the development of EURO was already said. H.J. Zimmermann brought again to mind the founding of EURO, J.P. Brans summarized the development during the 20 years from 1975 - 1995, and J. Krarup talked about the future of EURO. He speculated about EURO to be a society of individual personal members and about the installation of a permanent full-paid EURO office. He also made two comparatively clear predications. First, he predicted that EURO would remain a financially sound organization. Happily enough, we can say that he was right and hopefully this will remain for the years to come. The second prediction that EURO would have very soon a female president has not proved to be wrong either. The word 'soon' has only to be interpreted in a fair way.

When EURO started we had 14 member societies, a number which is now twice as much, and it was only one year ago that we could welcome Byelorussia as our 28th member. I remember very well EURO's first conference held at the Sheraton in Brussels in January 1975. The French speaking group separated from the majority of the English speaking participants and met in a special room. There is still some mystery about that congregation in the seventies of the last century.

A second mystery is still waiting for its solution as well. In one of the sessions on Operations Management, a colleague from southern Europe needed almost all of his presentation time to find the right plug to instal his projector. When he finally managed to do so, he was able to show us a nice picture of a shop floor of a car factory but nobody could guess what this had to do with his talk since time had elapsed. Nevertheless, though we didn't learn much about scheduling, all of us could experience, as eye-witnesses so to say, the deplorable state of European integration. And perhaps this had a deeper impact on our society's development than just the 999th paper on scheduling.

Since a lot has been said at our 20th anniversary in Jerusalem only 5 years ago, the Program Committee and the Executive Committee decided not to give an account of the last 25 years but to leave it at some additional remarks and to focus more on the future of OR and of EURO. Thus let us ask: Which might be the state of Operations Research and particularly of EURO in the next 25 years? Or, more precisely: Is OR likely to remain a science of its own or will it become obsolete so that at the time when the younger ones of us will have retired, there will be no proper courses on Operations Research at the universities and no conferences on this subject? What might we see looking out of the time machine?

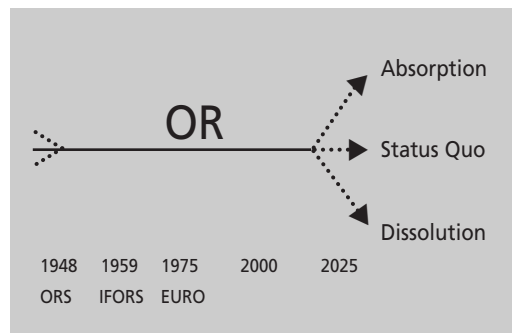


Fig. 1: Past and possible future of OR

Two extreme scenarios may lead to a decline: Operations research is absorbed by adjacent sciences and, secondly, Operations Research is totally split up into a variety of new independent disciplines. It is exactly these two scenarios that have often been described as a possible development ever since that OR arrived at some state of maturity, say in the late sixties of the last century, that is, already before EURO was founded. The increased dispersion of OR groups in industry in the eighties and the overwhelming growth of computer sciences give ample evidence for this permanent threat.

Clearly, one is posing such questions only when some state of maturity has been reached and an independent science has emerged that indeed can be absorbed or split up. In seeking for an answer, however, it will just be this independence, or more

precisely, the duration of the independence which will be a key issue.

In thinking in rather general terms about the future of a science, one may focus on three aspects, namely on:

1. science as a body of all its knowledge,
2. science as a university discipline and application area, and of
3. science as an organization.

For these three aspects, one may ask: 'Which developments might be responsible for a possible change?'

In approaching such a question, one might, as a first step, differentiate between

- science-endogeneous and
- science-exogeneous

origins and, in addition, one might differentiate between short-, medium-, and long-term changes. In interrelating and summarizing these categories, let us consider Fig. 2.

Clearly, forecasting in the short term (up to about 5 years in advance) is simply an extrapolation. Here, a science is mainly endogeneously driven, i.e., a science continues to refine its tools and increases the complexity of its applications. It possibly rearranges its subjects of teaching and carefully changes the state of its organization.

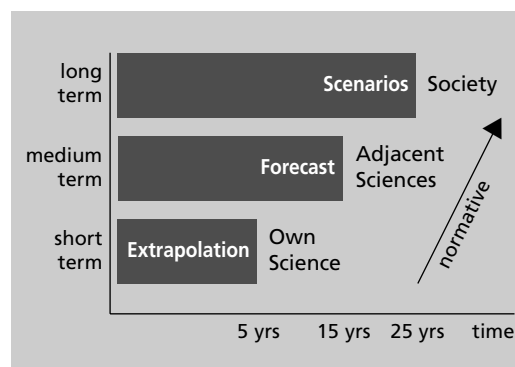


Fig. 2: Forecasts of a science

In the medium-term (up to about 5 to 15 years in advance), a forecast is no longer a purely endogeneous science-driven extrapolation. Rather the exogeneous influence of adjacent sciences and of general short-term societal changes play a predominant role. For OR, computer sciences and e-commerce may serve as current examples.

Finally, in the long run (up to about 15 to 25 years), medium-term societal developments play a predominant role and predictions can only be based on future societal scenarios. At least in the very long run, these scenarios will not simply be taken as given facts but might still allow to be influenced. Hence, going from short- to long-term predictions, normative aspects play an increasing role.

For the particular case of Operations Research at the time being, extrapolations are not that difficult to make. Advancements in research are in the pipeline of appropriate journals and conferences, the nature of new software products is almost known, the content of curricula will not change dramatically and institutional developments are on the agenda of the next meetings of executive bodies.

What is of interest here is the range of up to 15 to 25 years from now. This is the range of predominant societal influences, i.e., it is a duration within which most of the parameters of a science, as the direction of research, the way and content of teaching, and the structure of a science's organization could change. In fact, it is about half the time a scientist is actively contributing to her or his science.

Since society as a whole is usually not moving that fast, one might try to predict the state of the society and ask for the consequences w.r.t. a particular science. And of course since we are mainly interested in our initial question, whether OR might remain an independent science, only few aspects of future societal change are of importance.

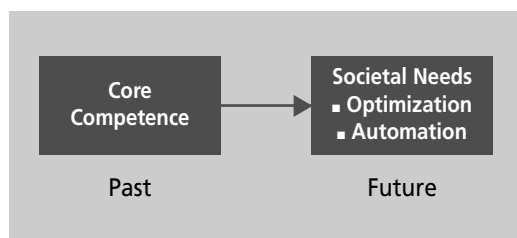
Looking at future scenarios, one might focus on just two issues which may almost be taken as unavoidable facts:

- (1) increased consumption of resources,
- (2) increased use of Information Technology.

Which are the consequences of these science-exogeneous facts for the development of Operations Research? To anticipate the answer: OR will neither be absorbed nor will it be dissolved but it will remain a science with a well-defined core competence and it will even gain in importance and societal visibility.

Why this optimism? The reason may be seen in future needs and in the establishment of a well-

defined core competence of OR in the past. As to the future scenarios, it is indispensable that the increased consumption of resources needs intelligent resource-saving planning procedures as they are being elaborated in Operations Research. Similarly, the increased use of IT fosters the progression of automation and calls for automated decision making. Again OR as a science of decision making is indispensable.



**Fig. 3: Societal needs and the core competence of OR**

Hence, it is clear that Operations Research is needed but it is not obvious yet that OR will not be absorbed or dissolved. Why should OR not be a part of mathematics, of computer science, or even of production and operations management? The answer to this question can again be found in the core competence that Operations Research has built up in its short history. This core competence means that in the labour markets in practice and in academics certain abilities and knowledge are requested for which a specific academic education is needed. This core competence has to do with the ability of OR of effectively contributing to solve real world problems. I.e., an operations researcher does not only cast a real world problem into a manageable formal model but she or he also creates mathematical procedures to derive a solution. Hence, an operations researcher fills a position which cannot easily be filled by people having a different educational background.

And here the past of OR becomes of importance. It is the merit of the pioneers of our field to have turned Operations Research into a university discipline. Particularly the text books played an important role. These books helped to sharpen the profile of our field and provided the core competence that is so urgently needed these days. Hence, OR will not be absorbed by other disciplines.

The second question still remains open: Will OR dissolve in creating more and more off-springs?

This development is very unlikely. Multi-criteria decision making or fuzzy set theory, for example, may be considered as off-springs. These areas consist of a body of knowledge and of an organization, i.e., they are organized within a proper society and publish a journal. They are not, however, an educational discipline, i.e., their subject is not wide and important enough to be recognized as a separate area within the educational system. Hence, these off-springs are no proper sciences and will consequently remain under the umbrella of Operations Research.

Only those offsprings will create a new discipline which are (1) of high practical importance, (2) do only rely on a very limited section of the broad methodological instruments of OR, and (3) possess an object area which needs a considerable amount of specific (non-OR) knowledge. Hence, a successful offspring will definitely be a new separate science so that OR is not undermined in its unique importance, i.e., there is no fear of a possible dissolution.

Thus in summarizing we may state that OR as a university discipline and a field of research will mainly stay as it is and presumably will, however, gain further importance in the next 25 years. The question remains, what will happen to its scientific organization and particularly to EURO whose 25th anniversary we are celebrating today. Since we may now presume the existence of OR, we have only ascertained a necessary condition for the further existence of EURO.

The development of EURO heavily depends on the political progress in the European integration. In particular, the assimilation of the labour markets and of the different national educational systems is of importance. Thus, for example, the academic evaluation and selection processes become more and more international and European. And here the role of European scientific societies and in particular of EURO will increase considerably. International and especially European conferences and journals will be of particular significance in that process. Moreover, the recently founded European research foundation might gain more importance and at the same time scientific organizations like EURO will obtain access to the design of specific research programs.

The question, however, still remains whether EURO will stay as it is, namely an association of national societies. It might be that an increased importance of EURO needs a restructuring in a direction already indicated 5 years ago by Jakob Krarup. As mentioned at the outset, in order to keep up with INFORMS, EURO might be forced to strengthen its organization by a full-paid office and some kind of a direct membership. It might then be able to promote Operations Research in Europe far more than it can be done at present.

Ladies and Gentlemen,  
it is the responsibility of all of us to steer OR into a bright future in continuously broaden its range of application and in further elaborating its research and institutional instruments. Much has been done in the past, and looking into the future it is the young generation we should particularly focus

on. The EURO Summer and Winter Institutes proved to be one of the most promising instruments. For those of us who have been involved in such an activity, it is most rewarding to see many of former participants in highly respected positions in Europe or abroad. EURO has just launched further instruments in supporting research efforts of young colleagues and in bringing them up to assume responsibility for the OR community on our continent. Remember that most of the founders of EURO had an age not older than the younger ones of us in this audience.

I wish the European Association of Operational Research Societies a successful further development, at least for another 25 years.

**Christoph Schneeweiss**

## Music at the EURO XVII Conference: the Travelling Musician

The conference was held in the beautiful palace of the faculty of Economics, on the banks of the Danube, in front of the Gellért hill. At the opening party, on Sunday July 16, every participant was given a CD called 'The Travelling Musician' and a book with the abstracts of the EURO XVII. In this book, there were some music scores accompanied by little drawings. Participants found this musical notation perhaps unusual for an OR publication however they had soon to discover that the EURO had commissioned composer Daniel Schell with a set of works related to Operational Research techniques.

I had the great pleasure of being Daniel Schell and I was pleased to meet so many interesting people at the opening cocktail party. Many of them as Jacob Krarup, or Raymond Bisdorff, Jean Bovet, are accomplished musicians. The others, as Christoph Schneeweiss, are distinguished music connoisseurs.

A year ago, or so, Philippe Van Asbroeck, himself a musician, learned that I use Operational Research techniques in my compositions. His idea was to produce an original CD that would mark the 25th

anniversary of EURO. Following our discussions, we came with the idea that we should have this original music produced in Hungary, not only for practical reasons, but to take advantage of a country with such a great musical history. Through the clarinet player Judith Gudor, who played already some of my works, we came in contact with the Hungarian conductor and composer Gergely Vajda.

Gergely works regularly with a famous brass quintet called 'Brass in the Five'. He sent us a CD of this Ensemble performing the music of Josef Sari. We were immediately impressed and decided to work with them. The Ensemble 'Brass in the Five' is made of Peter Burgett (trombone and leader), Tamas Toth (trumpet), Laszlo Simai (flugelhorn), Peter Soos (Horn in F) and Tibor Tacaks (tuba). They are famous in Hungary and abroad for having created famous contemporary works from Sari, Eotvos, and Vajda.

Brass quintets are relatively unusual, and so there is not much music written for them. We thought that this would mark an original step for the



World creation of the Travelling musician at the EURO 25th Anniversary session by the Quintet Brass in the Five, directed by Gergely Vajda.

EURO. The decision was taken, and I started to write this important 'Quintet'. This is a relatively large piece, almost forty minutes long, with a lot of different forms, as chorals, dances, duets, trios, tutti, dances, fast passages full of technical difficulties in order to exploit the amazing versatility of Brass in the Five.

Of course, we realised that a Brass Quintet might be a little 'hard to swallow' for some. So we decided to join to the CD two 'Italian Trios', which I wrote in 1992, for the 'Harmonia Trio' of Firenze, but were which still unperformed in Hungary. This was made for a trio consisting of Judith Gudor (clarinet), Emese Mali (Piano) and Lajos Dvorak (cello).

We wanted also simple music to be performed by the 'young musician'. That was the origin of the 'Optimal studies' to be performed by various ensembles. This music has been printed by Edition Simonffy Budapest and will be sent to a choice of Ensemble, Music Academies and Universities, as a commemoration of EURO's anniversary. Every Optimal Study contains its own musical theme as well as some algorithmic feature.

In late April, we came to Hungary and recorded the music in the Phoenix Studio, near Budapest,

under the excellent artistic supervision of Ibolya Toth. Let us come back to the EURO meeting. On Monday 17, morning, we had already traditional music by a Hungarian folk ensemble.

On Tuesday 18, happened the conference "Optimality in musical melodies and harmonic progressions: The travelling musician". The success of the conference was largely due to the fact that Judith Gudor (clarinet) and Emese Mali (piano) played the musical examples. Operational Research, at least to me, is a science of optimisation that applies to man. Although I am a fan of computer-assisted composition, I am not so much impressed by music played by computers. Traditional harmony teaches, in an empiric way, to minimise the steps between notes in the melodies that have to be sung. One of the points of my conference was to demonstrate that it could be done with optimisation algorithms such as the minimum spanning tree. And so, it was interesting to see Emese Mali singing 'step-optimised melodies' with easiness, or fight with des-optimised non-melodies involving large saltos.

All the examples of Brownian, or Gaussian generated music, took also some flavour when played by such tasteful musicians. The beautiful geometric tilings, which I call karos, found also resonance



Composer Daniel Schell introduces the Travelling Musician at the EURO 25th Anniversary session chaired by Ch. Schneeweiss, President of EURO, and J. Krarup, Chair of the EURO 17 OC.

in the heart of the listeners, when interpreted by the fingers of Judith Gudor.

Another highlight was of course the World creation of the 'Travelling Musician' by the Quintet Brass in the Five, directed by Gergely Vajda. This happened on the same Tuesday around 5pm in a large auditorium of the Faculty.

After a short presentation by Christoph Schneeweiss, I outlined the story which goes behind the work. A Travelling Musician goes on the road. He falls slowly asleep and dies in terrible car crash. Arrived in the Paradise, he finds it progressively so boring that he asks to meet God. God comes and allows him to go back on earth. What will happen now...? The honourable Pundits might ask why God plays a role in an OR drama? Well, the hidden question of the travelling musician to God was: "Is my life NP-hard or not?"

This is no opera or film. There is no real synchronisation between the action and the music. However, the listener can somehow 'follow' a story if he wishes so. The musicians played this difficult piece with unique attention and musicality. They proved to the audience that a brass ensemble is able to show much variety in its sound. The perfection of their tone and togetherness was really impressing and so they receive a warm applause and were covered with flowers. I, for myself, was decorated by Christoph, and received the Travelling Musician's decoration-kit: a bread with cumin, a bottle of the best 'Bull's blood' Hungarian wine, and last but not least... a pocket compass to find my way on the un-optimised roads.

The concert finished at 6pm, and we had just time to rush to the boat on the Danube, which brought us to an island where we had a party, with traditional folk and dance.

The last event, which closed in fact the EURO meeting, happened on Wednesday 19 night in Obudai Tarsaskor, a historic hall, situated near the Danube, in East Buda.

The trio made of Judith, Emese and Lajos presented a charming program presenting mostly Hungarian composers.

First we admired the mastership of Emese in Bela Bartok's opus 14 for piano, alternating meditative with violent passages. It was followed by 'Faust valse' by Lizi Ferenc. (Franz List, in Hungarian). Emese, in duet with Lajos, cello, played 'Two Hungarian dances' by Farkas Ferenc. Judith Gudor on clarinet played a beautiful piece by Gergely Vajda called 'Trembling'. This is a piece that concentrates on the sound rather than on the 'notes'. It was an opportunity for the audience to discover that Vajda is not only an excellent conductor, but also a tasteful composer. Eventually, the audience could discover the two Italian Trios by Schell. Both pieces are based on traditional melodies from Italy and use a variety of transformation to generate variations. 'Notte d'estate' is a fantasy on a dance in 6/8. 'Fenesta' is a variation on an antique Neapolitan melody called 'Fenesta qua lucive'.

This was the end of the EURO XVII, in one of its probably most musical edition. May I here thank the organisers for their courage and dedication to contemporary music.

#### **Daniel Schell**

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Web: <http://users.skynet.be/clic.music>

## EURO XVII – A Personal Perspective

The 17th European Conference on Operations Research was held at the Budapest University of Economic Sciences and Public Administration in Hungary during 16-19 August 2000. I attended the conference and would like to share some personal opinions about the experience.

The conference coincided with the 25th birthday of the Association of European Operational Research Societies (EURO), of which ORSSA is a member, and was therefore quite a festive occasion. A piece of music, called *The Travelling Musician*, was even commissioned from Daniel Schell for the celebrations! The social programme included a lovely reception at the Hungarian baths of the Hotel Gellért and a truly spectacular banquet on Margaret Island in the middle of the Danube (including a boat trip and a show by Hungarian dancers).

There were 24 parallel streams at the conference, including topics such as: MCDA theory & applications, scheduling & production, combinatorial optimisation, graph theory, queuing theory, OR methodology for complex societal problems, data analysis, decision support systems, mathematical programming, goal programming, dynamic programming, stochastic programming, transport problems, control theory, dynamic production, heuristics and simulation, probability theory and quality control, artificial intelligence, game theory, information theory and numerous -applications and case studies.

There were two plenary lectures. The first was titled *OR Ethics & Decision*, by Jean-Pierre Brans, this was also the opening lecture. This interesting talk was the necessity of ethical considerations by OR teachers and practitioners: the speaker passionately professed the introduction of a new code

of conduct, overseen by the swearing of a new *Oath of Prometheus*, which is similar to the one by Hypocrates for medical doctors. The second plenary lecture, which was the IFORS *Distinguished Lecture*, was delivered by George Nernhauser and was entitled *Large Scale Discrete Optimisation in Airline Scheduling*. There were also 22 semi-plenary lectures, collectively starting off each day's proceedings at the conference. The *Best Applied Paper Prize* was awarded to Dick den Hertog and Peter Stehouwer for their work on *Optimising colour picture tubes a novel approach for high-cost non-linear programming*.

Amongst the many talks that I heard, my personal favourites include a talk by Daniel Schell on how he used the Gaussian distribution, random walks, Fibonacci numbers and Kruskal's algorithm for shortest spanning trees to compose *The Travelling Musician*, a talk on finding the chromatic number of a graph by means of criticality by Alain Hertz, a lecture by Werner Junginger on heuristic timetabling, a talk by Carlos Azmat on garbage collection routing and a talk by Hervé Thiriez on airport luggage handling calibration.

The conference was well organised and attended by a large number of delegates. I was able to forge new collaboration links and I even got new ideas for my own research from some of the speakers. The OR community in Europe seems to be alive and well.

From ORSSA Newsletter July 2000 /  
ONSA Nuusbrief Julie 2000

**Jan van Vuuren**  
Stellenbosch University



PRELIMINARY ANNOUNCEMENT

# EURO 2001

*the European Operational Research conference*

*Rotterdam, the Netherlands, July 9-11, 2001*

**information & registration:**

**[www.euro2001.org](http://www.euro2001.org)**

**mail to [info@euro2001.org](mailto:info@euro2001.org)**

A conference with:

All OR topics

Special attention to Smart Logistics

Company visits

Europe's cultural capital of 2001

Port of Rotterdam experience

Financial Risk Management Seminar in Amsterdam.

*Location:*

*Erasmus University Rotterdam*

*Program committee:*

*Prof. dr. L.N. Van Wassenhove (chair)*

*Organizing committee:*

*Prof. dr. J.A.E.E. van Nunen (chair)*



ASSOCIATION OF EUROPEAN OPERATIONAL RESEARCH SOCIETIES

## EURO 2001 Conference

The eighteenth conference of the Association of European Operations Research Societies will be a forum for academics and business on recent developments in OR

The conference will take place at the Erasmus University in the logistic "mainport" Rotterdam, The Netherlands, on July 9-11, 2001. Besides the exchange of knowledge on all OR topics and tutorial sessions on "smart logistics and innovative operations", many company visits and invited sessions will enrich the conference.

The modern conference site is situated on the campus of the Erasmus university in Rotterdam, the city with the largest port in the world and 2001's European cultural capital. Moreover, a post conference seminar on financial risk management will take place in Amsterdam.

### Registration

Use preferably our web site to register electronically, otherwise ask for register card (see : further information).

Fees	Early	Late
Regular	300 euro	350 euro
Student	200 euro	250 euro

### Abstract Submission

Please refer to our web site for submission instructions, otherwise ask for abstract submission instructions (see : further information).

### Further Information

E-mail: [info@euro2001.org](mailto:info@euro2001.org)  
 Web site: [www.euro2001.org](http://www.euro2001.org)  
 Fax: +31 10 408 92 22

### Deadlines

Abstract submission  
 March 1, 2001

### Early Registration

May 1, 2001



# EURO Award Excellence in Practice 2001 Call for Papers

At the EURO 2001 Conference in Rotterdam, July 9-11 2001, the EURO "Excellence in Practice Award" will be conferred to the best paper describing an application of Operations Research in practice. The prize, which is a distinct honour, consists of

- a certificate of excellence in OR practice for both the author(s) and the organisation concerned
- endowments of CHF 5000.

#### The prize is subject to the following conditions

- The paper has not been submitted concurrently to another competition.
- The paper is not yet published.
- The Jury selects a short-list of finalist papers which will be submitted to a feature issue of EJOR guest-edited by the chairman of the Jury.
- The finalist papers will be presented at the EURO Conference in Rotterdam in a special session.
- The conference fees of the authors of the finalist papers will be waived.
- The winner of the prize will be determined by the Jury after the presentation of the finalist papers and announced at the closing session.

#### Criteria for the evaluation of the papers are

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

#### Important Dates

- March 1, 2001: deadline for submitting papers
- May 1, 2001: announcement of finalist papers
- July 9-11, 2001: EURO Conference Rotterdam

Authors are invited to submit papers in electronic form to the Chairman of the Jury:

Prof. Dr. Bernhard Fleischman

University of Augsburg, Germany,

Dept. of Production and Logistics

Universitätsstr. 16, D-86135 Augsburg

Tel.: +49-821-598-4044

Fax: +49-821-598-4215

E-mail: [bernhard.fleischmann@wiso.uni-augsburg.de](mailto:bernhard.fleischmann@wiso.uni-augsburg.de)

## Call for bids for EURO-k conference 2004

EURO-k conference is the main and largest conference of EURO. EURO-k conferences provide operational researchers with an international meeting ground where they can present their research output, become updated on new OR research and technology, meet old colleagues and make new friends.

The list of all past and planned EURO-k conferences presented here gives a cross-country overview EURO's activities.

Any OR national society member interested in organizing the EURO-k conference in his country for 2004 is invited to submit an application. The guidelines for EURO-k organizers appear in this Bulletin. EURO VP1, Zilla Sinuany-Stern, can provide further information on request.

The deadline date for proposal submission is December 1, 2000.

OR societies who never organized an EURO-k conference are especially encouraged to do so.

Proposals should be sent to:

Prof. Zilla Sinuany-Stern

Department of Industrial Engineering and Management

Ben-Gurion University

Beer Sheva - 84105 Israel

Tel.: 972-7-6472223

Fax: 972-7-6472958

E-mail: zilla@bgumail.bgu.ac.il

**Zilla Sinuany-Stern**

### EURO-k: Past and Future Conferences

k	Year	Country	City	No. of participants
I	1975	Belgium	Brussels	506
II	1976	Sweden	Stockholm	481
III	1979	Netherlands	Amsterdam	508
IV	1980	U.K.	Cambridge	610
V*	1982	Switzerland	Lausanne	598
VI	1983	Austria	Vienna	488
VII	1985	Italy	Bologna	550
VIII	1986	Portugal	Lisbon	496
IX*	1988	France	Paris	1176
X	1989	Yugoslavia	Belgrade	295
XI	1991	Germany	Aachen	743
XII*	1992	Finland	Helsinki	1206
XIII	1994	U.K.**	Glasgow	745
XIV	1995	Israel	Jerusalem	642
XV*	1997	Spain	Barcelona	1048
XVI	1998	Belgium**	Brussels	760
XVII	2000	Hungary	Budapest	500
XVIII	2001	Netherlands**	Rotterdam	?
XIX*	2003	Turkey	Istanbul	?
XX	2004	?	?	?

\* Conference organized jointly with INFORMS.

\*\* The second time the country is hosting EURO-k.

# Organisation of EURO k Conference Guidelines

## Principles

A EURO-k Conference is intended to be a forum for communication and co-operation among European operations researchers. It is also intended to be an international meeting of operations researchers who are active in all the diverse special areas of operations research, and to serve the free exchange of new ideas and promising research results. A EURO-k Conference is not held in the same year as an IFORS conference.

## Site and time

The site of a EURO-k Conference may be a suitable place in the country of a EURO Member Society. In order to keep costs as low as possible, the conference is held in a university or an institution providing meeting rooms at minimum or no charge. The conference usually takes place in summer. Both the site and time of a EURO-k Conference are proposed by the organising Society and have to be agreed by the Council at least 2 years before the proposed date. If another organisation, e.g., INFORMS, is to be involved as well, special protocols (to be endorsed by the Council) have to be used.

## Organising Committee

The Organising Committee is chaired by a local person, member of the organising Society, to be approved by the EURO Council. It includes among its members the Chair of the Programme Committee and EURO Vice-President 1. The Committee is responsible for running all organising affairs, including:

- attracting potential sponsors
- the reservation of rooms and equipment for the conference, including rooms for meetings of the EURO Council, Executive Committee and Working Groups, and Presidents of O.R. Societies
- support in looking after eminent invited speakers
- the reservation of hotel and student rooms in different price categories for the participants
- the organisation of a social programme including the main social event (banquet), visits to tourist

attractions, local entertainment events etc. for the participants and accompanying persons

- the provision for food at lunch time and coffee and beverages during the conference days
- the organisation of book and software exhibitions
- printing of the call for papers, invitation programme, final programme and the abstracts booklet, etc.
- providing information at the reception desk for use by delegates to see which delegates have so far arrived, etc.

The Chairman of the Organising Committee, in particular, maintains close cooperation with the Chair of the Programme Committee and EURO Vice-President 1. He/She presents a report regarding the organisation of the conference to the Executive Committee not later than six months after the conference.

All the organising matters are treated by the Committee members. Use of external convention offices should normally be avoided if using such offices will result in increasing the cost of the conference. In order to minimise cost, the ex officio members do not, in general, attend meetings of the Committee but receive papers and provide advice. Since the members of the Committee are generally too busy during the conference to attend sessions, they are excused from paying the registration fee.

## Programme Committee

The Programme Committee is chaired by a person appointed by the Council on the nomination of the Executive Committee coming from a different country to that in which the conference is organised. This Committee includes among its members the Chair of the Organising Committee and the Chair of the Programme Committee of the next EURO-k Conference once appointed. Other members of the Committee are nominated by the Chair from different EURO Member Societies up to a maximum of six. The nominations are approved by the Executive Committee.

The Programme Committee is responsible for all scientific matters including:

- the proposal of the theme of the conference, to be decided by the EURO Council
- the preparation of the Scientific Programme of the conference, including plenary, semi-plenary and parallel sessions
- the invitation of speakers for the plenary and semi-plenary sessions
- the provision in the Programme for meetings of the EURO Council, Executive Committee, presidents of O.R. Societies and Working Groups, and Editorial Board meeting of EJOR
- the preparation of the Call for Papers, Invitation Programme and the Abstracts booklet
- making available the Call for Papers, Invitation Programme and Final Programme on the Internet
- the issuing of instructions to stream organisers, session chairs and speakers
- the preparation of a special issue of the European Journal of Operational Research
- issuing daily any changes to the programme etc.

The Chairman of the Programme Committee, in particular, keeps close co-operation with the Chair of the Organising Committee and EURO Vice President 1. He/She presents a report on the conference regarding the Scientific Programme to the Executive Committee not later than six months after the conference.

Most of the work of the Committee is undertaken by correspondence. The Committee however meets to agree on the allocation of tasks to members, the outline programme and the call for papers usually at the previous EURO-k Conference (or an IFORS conference). The Committee then meets again to accept papers for the Invitation Programme and to approve its form, although to save travelling and hotel costs only some members of the Committee attend. This number must be allowed for in the conference budget.

### Special EURO events

**1.** The opening and closing session should be structured in mutual consent of the OC, PC, and the Executive Committee. Particularly the opening session should give EURO and the inviting national society the opportunity to present themselves to the public. The presentation of the Gold Medal

and the accompanying lecture of the laureate are part of the opening session.

**2.** For the presentation of other prizes, like the Best Applied Paper Award (BAP) or the Special Area Prize (SAP), a suitable occasion of a semi-plenary lecture should be envisaged.

**3.** The PC should provide a minimum time slot of a semi-plenary lecture for the IFORS-EURO distinguished lecture (IEDL). It is the programme committee's responsibility to eventually enlarge this slot in order to allow for a (full) plenary lecture.

### Finance

An initial budget of the EURO-k Conference accompanies the proposal of the organising Society, which has to be agreed upon by the Council. A final budget is submitted to and approved by the EURO Executive Committee at least 12 months before the conference. The system of payment of abstract deposits and registration fees and the location of the bank accounts receiving these fees are chosen by the EURO Treasurer after consultation with the Organising Committee.

EURO Gold Medal Laureates, members of the EURO Executive Committee and the speakers at the plenary and semi-plenary sessions are excluded from paying fees. Students pay a reduced amount. EURO also may provide a sum to meet the registration fees of participants of some special category. Reduced fees may be decided by EURO Council for other categories of participants.

EURO provides, if asked so by the Organising Committee, a loan to cover the costs incurred before registration fees come in. The loan shall be refunded to EURO at the latest at the conference date.

The organising Society has a choice of options for remunerating EURO. It either (a) pays to EURO a fee of CHF 20.000 and keeps any surplus for itself and meets any losses. This avoids the need for EURO to audit the conference accounts. Or (b) if a society cannot organise a conference on this basis, because, for example, of its relatively small size, it may choose to accept between 0% and 30% of profits/losses or up to 50% if it has to cancel its own conference that year. In this case the conference accounts have to be audited by an auditor appointed by EURO.

## Agreement preparation

EURO Vice president 1 prepares a formal agreement based on the above guidelines which is signed by EURO President and Secretary, a representative of the organising Society and the Chairs of the Organising and Programme Committees at least one year before the Conference.

In appointing the chairpersons of OC and PC, these guidelines should be considered as the basis of their task.

Years before conference	Activity	Concerned party
4.5	Asking for bids	VP1/national societies
4.0	Selection of bids	EC, VP1
3.5	Presentation of selected nat. societies	nat. societies
	Acceptance of one of the bids Information of nat. society about the decision, information of the OC chair of the EURO-k guidelines	Council EURO President
3.0	Selection of the PC chair	EC, VP1
2.5	Appointment of the PC chair Communication of the Council decision to the PC chairperson, information about the EURO- k guidelines	Council EURO president
2.0	Approval of the PC members appointed by the PC chair 1st PC meeting	EC, VP1, PC chair PC, OC, VP1
1.5	Conference agreement	PC, OC, nat. soc., VP1 EC, EURO president
1.0	2nd PC meeting	PC, OC, VP1
0.5	3rd PC meeting	PC, OC, VP1
0.0	Conference	

## EURO Winter Institute XVIII

# Metaheuristics in Combinatorial Optimization

### Lac Noir (Switzerland) ■ 5 - 17 March 2000

This is the report on the 18th EURO Summer/Winter Institute, which took place during the spring 2000 in Switzerland. It was organized by Alain Hertz (Ecole Polytechnique Fédérale de Lausanne) and Marino Widmer (Université de Fribourg) under the auspices of the Association of European Operational Research Societies (EURO) and with the additional support from the Swiss OR Society, the Swiss National Science Foundation and the "Conférence Universitaire de Suisse Occidentale" via the "3e cycle romand de recherche opérationnelle".

The topic of ESWI XVIII, "Metaheuristics in Combinatorial Optimization", was selected due to its great current scientific interest: indeed, in recent years, several metaheuristics have proved to be highly efficient for the solution of combinatorial optimization problems. The Institute was focused more particularly on the development and the use of local search techniques (e.g., tabu search, simulated annealing) and evolutionary algorithms (e.g., genetic algorithms, scatter search). Applications of these metaheuristics on academic or real life problems were also discussed.

Seventeen promising researchers have attended this Winter Institute and seventeen papers have been submitted for publication to a special issue of EJOR. This attests the scientific success of ESWI XVIII.

### Scientific programme

Ninety minutes were dedicated to each participant. This means 45 minutes for the talk and 45 minutes for a discussion. We were positively surprised by the high scientific quality of the presentations, the very fruitful interactivity between the speakers and the audience, and the fantastic work atmosphere. The following list contains the discussed papers:

**Maria Joao Cortinhal (Portugal)**

A two step tabu search heuristic for the single source capacitated location problem

**Andreas Fink (Germany)**

Applications of Modern Heuristic Search Methods to Continuous Flow-Shop Scheduling Problems

**Nathalie Grangeon (France)**

A contribution to the stochastic flow shop scheduling problem

**Andrzej Jaskiewicz (Poland)**

Developing efficient genetic local search type heuristics on the basis of global convexity tests - vehicle routing example

**Ralf Keuthen (United Kingdom)**

New Local and Variable Neighborhood Search Heuristics for a Sequencing Problem in Printed Circuit Board Assembly applied to the Travelling Salesman Problem

**Tamas Kis (Switzerland)**

AND-OR graph scheduling

**Georg Kliewer (Germany)**

A General Software Library for Parallel Simulated Annealing

**Asaf Levin (Israel)**

Lexicographic local search and the p-center problem

**Alberto Moraglio (Italy)**

Genetic Local Search for Job Shop Scheduling Problem

**Jelica Petrovic (Yugoslavia)**

Solving Spread Spectrum Radar Polyphase Code Design Problem by Tabu Search and Variable Neighbourhood Search

**Inmaculada Rodriguez (Spain)**

The Variable Neighborhood Tabu Search for Location/Allocation Problems

**Marc Sevaux (France)**

Building a Genetic Algorithm for a Single Machine Scheduling Problem

**Kenneth Sörensen (Belgium)**

Data Mining with Genetic Algorithms on Binary Trees

**Henrico Wanders (The Netherlands)**

The composition of semifinished inventories at a solid board plant

**Christelle Wynants (Belgium)**

Optimizing Reserve Capacities of Partially Equipped SDH Networks



**Ana Xambre (Portugal)**

Joint cell formation and operation allocation in cellular manufacturing using simulated annealing

**Nicolas Zufferey (Switzerland)**

An Adaptation of the Variable Neighborhood Search Method to the Graph Coloring Problem

In addition to these talks, the participants have had also the opportunity to hear three additional dedicated presentations, given by Alain Hertz and Manuel Laguna. Time for general discussion was also scheduled.

Moreover, in order to develop the contacts between the international participants and the Swiss doctoral students, we combined ESWI XVIII with the annual meeting of the "3e cycle romand de recherche opérationnelle", the association of the OR groups of the universities located in West-Switzerland. During this meeting, the following lectures were scheduled :

**Martin Grötschel (4 lectures)**

Modern Challenges of Combinatorial Optimization

**Manuel Laguna (4 lectures)**

An Exploration of Metaheuristic Optimization: Tabu Search, Scatter Search and Path Relinking

**Jon Lee (2 lectures)**

Some Methods for Treating Nonlinearities in Combinatorial Optimization

**Social programme**

The instructions to the organizing committee of an ESWI emphasize the importance of the social aspect of the Institute in facilitating the emergence of a scientific network among the promising researchers. We prepared different kinds of activities :

**A welcome party**

which was useful to create the first links between the participants...

**A cocktail party**

offered by the "3e cycle romand de recherche opérationnelle"

**Ski**

as Lac Noir is located in the Swiss (Pre-)Alps, it was an excellent opportunity to initiate some participants to the practice of ski ! It was marvelous to see their pleasure. The strongest ones have decided to ski three consecutive afternoons, the wisest ones preferred to walk.

**Visit of Fribourg**

at the end of the first week, a visit of Fribourg was organized. We have visited the old city, two churches, a funny funicular and two pubs...

**Walk**

a two-hours walk was planned. Due to wrong indications concerning the way, the duration was the double, thanks to the snow...

**Excursion**

last Wednesday, a one-day excursion was organized. We have visited an electrical power factory, eat a classical cheese "fondue" with some other local specialities, visited the Geiger Museum (the artist who designed the creatures of the "Alien" movie) and concluded with the visit of a cheese factory. What a day !



#### Accommodation

ESWI XVIII took place in the "Primerose Hotel". The participants were dispatched in small flats (3 participants per flat). The conference room was big enough for the ESWI group, as it can contain 50 persons. The hotel have also interesting attributes, as a swimming pool, a sauna and a fitness room (free access for the participants). Moreover, there were some additional possibilities as ping-pong or billiards. Notice that the participants have organized several billiards-contests after the dinners. As the village is located "in the middle of nowhere", there were not so many opportunities out of the hotel. This was also an advantage to create the "glue" between the participants.



#### Conclusion

At the end of ESWI XVIII, everyone was tired but... happy. We had the impression we have lived a particular moment in our lives. From the organizers point of view, we consider we have reached all our objectives (scientific and social) during this ESWI. As we received many nice messages after the ESWI, we think that the participants share our positive feeling.

#### But what happens now ?

First point : we will prepare a special issue of EJOR. We received 17 papers. We have started the refereeing process.

Second point : the participants have decided to create a new EURO working group (EU/ME : European Chapter on Metaheuristics, to be pronounced You and Me). Preliminary contacts have been taken with Raymond Bisdorff, the EURO Vice-president in charge of EWG. If you want more information concerning this working group, do not hesitate to contact Marino Widmer (marino.widmer@unifr.ch).

The first meeting of EU/ME is already scheduled, which is a very positive point for the future.

**Alain Hertz and Marino Widmer**

# EURO Summer Institute (ESI) XIX

## Toulouse, France

### 9-22 September 2001

#### Decision Analysis and Artificial Intelligence

#### Scope

In recent years more and more researchers in the field of decision analysis and artificial intelligence realised they work on common, parallel or similar subjects. Issues such as: planning under uncertainty, qualitative models of decision making, distributed decision making, automated decision making, preference modelling, ordinal structures, rational and autonomous agents, learning, are now in the centre of both theoretical and applied research of both disciplines. The ESI XIX welcomes contributions from both areas on these subjects.

EURO Summer and Winter Institutes (ESWI) are organised to encourage good social and working relationships among promising young OR scientists in Europe. One important purpose of a EURO Institute is to establish a network of promising young researchers (normally aged 25-35) who will continue to work together in future, e.g. as a working group. The participation is limited to a group of about 25. Participation is an honour and a person can be a participant in an ESWI only once in her/his career.

Applicants should submit an unpublished paper within the theme of the Institute together with their curriculum vitae to their National OR Society. Each National Society of EURO will then select one (eventually two) candidate(s) and submit the information to the chairperson of EWI XVIII. The scientific committee will make the final choice of the participants.

#### Activities

At the Institute there will be lectures given by invited speakers, but the main emphasis will be on the participants' presentations and on the discussion about the papers. A special issue of EJOR (European Journal of Operational Research) will be prepared based on papers presented at the Institute. EURO considers the social activities to be most important for the success of the ESI, since it is through these activities that friendships can develop and a scientific network can be established for co-operation in the future. For this purpose, the organisers of this French ESI will prepare a varied social program.

#### Location and expenses

ESI XIX will take place in Toulouse, a lovely town in the South West of France, at the Campus of Université Paul Sabatier. The cost of stay at the ESI (scientific programme, accommodation, meals, and social activities) is covered by EURO and other sponsors. The participants will have to cover the costs of travel expenses to Toulouse. However, EURO encourages the National OR Societies to give support to their participants to cover these costs.

#### Schedule

Deadline for submission of papers to the National Societies: to be decided by each National Society.

Deadline for submission of information about the candidates by the National OR Societies to ESI: 31 March, 2001.

Announcement of selected participants by the Scientific Committee of ESI: 30 April, 2001.

**Chairpersons:**

- Patrice Perny, LIP6, Université Paris 6, Paris, France.
- Alexis Tsoukiàs, LAMSADE - CNRS, Université Paris Dauphine, Paris, France.

**Organising Committee:**

- Denis Bouyssou, ESSEC, Cergy Pontoise, France.
- Frédéric Garcia, INRA, Toulouse, France.
- Hélène Fargier, IRIT - CNRS, Université Paul Sabatier, Toulouse, France.
- Jérôme Lang, IRIT - CNRS, Université Paul Sabatier, Toulouse, France.
- Daniel Lehmann, Hebrew University of Jerusalem, Israel.
- Patrice Perny, LIP6, Université Paris 6, Paris, France.
- Alexis Tsoukiàs, LAMSADE - CNRS, Université Paris Dauphine, Paris, France.
- Philippe Vincke, SMG-ISRO, Université Libre de Bruxelles, Bruxelles, Belgium.

**Scientific Committee (to be completed):**

- Didier Dubois, IRIT - CNRS, Université Paul Sabatier, Toulouse, France.
- Jean-Yves Jaffray, LIP6, Université Paris 6, Paris, France.
- Hector Geffner, Universidad Simon Bolivar, Caracas, Venezuela.
- Daniel Lehmann, Hebrew University of Jerusalem, Israel.
- Jean-Charles Pomerol, LIP6, Université Paris 6, Paris, France.
- Henri Prade, IRIT - CNRS, Université Paul Sabatier, Toulouse, France.
- Roman Slowinski, Poznan Technical University, Poznan, Poland.
- Philippe Vincke, SMG-ISRO, Université Libre de Bruxelles, Belgium.

**For more information please see:**

<http://www-poleia.lip6.fr/~perny/ESI2001>

# Exchange of young Researchers between EURO, ESWI and IFORS

This year EURO and IFORS agreed to exchange young researchers between their institutes. IFORS will send one young researcher from a developing country to ESWI and EURO will send one young researcher to IFORS Institute. This cooperation will strengthen the relations between EURO and IFORS.

## **GUIDELINES FOR THE EXCHANGE OF YOUNG RESEARCHERS BETWEEN EURO ESWI AND IFORS:**

The exchange of young researchers between EURO and IFORS works both ways:

- A young researcher from a developing country will participate in the program of EURO Summer/Winter Institute (ESWI) and
- A young European researcher will participate in the program at IFORS institutes in a developing country.

Following are the guidelines for each organization:

### **Guidelines for ESWI:**

Each ESWI organiser is responsible to send a call for candidates to the IFORS office. IFORS is responsible for advertising the call for candidates from developing countries for each ESWI. IFORS is also responsible for selecting only one candidate among developing countries who must meet all the ESWI criteria (age, he must bring with him an unpublished paper in the relevant topic). IFORS will cover travelling costs while local costs will be assumed by EURO.

### **IFORS Institutes in Developing Countries**

IFORS is responsible for sending the EURO VP of IFORS a call for candidates for IFORS institutes, which he will distribute among the EURO member societies. He will then be responsible for selecting one candidate whose travel expenses will be covered by EURO and whose local expenses will be paid by IFORS.

**IFORS invites the member societies of EURO to send candidate applications for participation in the ELAVIO 2001 Summer School Institute for Young Scholars**

**Applications should be forwarded to Prof. Yannis Siskos, EURO VP of IFORS, at the Technical University of Crete, University Campus, 73100 Chania, Greece  
Tel.: 30-821-37349 – Fax: 30-821-64824  
e-mail: siskos@hercules.ergasya.tuc.gr.**

**Prof. Siskos will select one young scholar to be co-sponsored by EURO and IFORS.**

## ELAVIO 2001

### The Latin American Association of Operations Research Societies Summer School for Young Scholars

Viña del Mar ■ Chile ■ January 8–12, 2001

Organized by ICHIO, the Chilean Society of Operations Research Societies, and the Industrial Engineering Department of the University of Chile.

Sponsored by IFORS, the International Federation of Operations Research Societies.

The eighth ELAVIO will be held in a resort in the Viña del Mar area, a 2 hour drive from Santiago, the Capital of Chile.

ELAVIO is designed for young scholars in areas related to Operations Research and Applied Mathematics. The school is organized each year and previous versions took place in different locations of Latin America. The main purpose is the interaction and interchange of ideas between seniors and young scholars.

The structure of ELAVIO is a combination of tutorials given by the senior academics, which take about 50% of the total time, and presentations given by the young scholars to discuss their work.

The main areas of the school will be Combinatorics, Metaheuristics, Linear and Nonlinear Programming and Stochastic Modeling. The following professors, among others, will give the tutorials:

- Irene Loiseau, University of Buenos Aires, Argentina
- Francisco Barahona, IBM Research Center, New York
- Mikael Ronnqvist, LiTH, Linkoping, Sweden
- Sergio Maturana, Catholic University of Chile
- Miguel Nussbaum, Catholic University of Chile
- Marcos Singer, Catholic University of Chile
- Roberto Cominetti, University of Chile
- Rafael Epstein, University of Chile
- Samuel Varas, University of Chile
- Andrés Weintraub, University of Chile

The Viña del Mar area is the center coastline of the country. It has beautiful beaches and a unique

landscape. The city of Valparaiso, which is half an hour away from the conference center, is Chile's most important harbor and the location of the National Congress. Since the meeting will be held during our summer, recreational activities will also be organized.

Participants must pay a \$50 US registration fee and ELAVIO will cover the living expenses for young scholars coming from ALIO countries, as well as those invited by exchange agreements. To be admitted, postulants must send by email (elavio@dii.uchile.cl) a Curriculum Vita, one recommendation letter from the Institution or his/her advisor, his/her research field and, optionally, the title of a work to present.

The Organizing Committee, based on the received profiles, will decide the admission of 40 participants.

#### For more information, please contact us at:

E-mail: [elavio@dii.uchile.cl](mailto:elavio@dii.uchile.cl)

Home Page: <http://www.dii.uchile.cl/elavio>

Fax: (56-2) 6897895

Address: Dept. of Ind. Engineering, Univ. of Chile, Republica 701, Santiago-Chile

#### ELAVIO 2001 Chair

Andrés Weintraub  
Department of Industrial Engineering,  
Univ. of Chile  
E-mail: [aweintra@dii.uchile.cl](mailto:aweintra@dii.uchile.cl)  
Phone : 56-2-6784046

#### Organizing Committee

Fernando Paredes (ICHIO President),  
[fparedes@ing.puc.cl](mailto:fparedes@ing.puc.cl)  
Felipe Caro, [fcaro@dii.uchile.cl](mailto:fcaro@dii.uchile.cl)  
Andrés Musalem, [amusalem@dii.uchile.cl](mailto:amusalem@dii.uchile.cl)  
Gabriel Weintraub, [gweintra@dii.uchile.cl](mailto:gweintra@dii.uchile.cl)

# Call for bids for EURO Summer/Winter Institute (ESWI) 2002-4

Although small in size (less than 30 participants) ESWI is a powerful tool. ESWI is devoted to young researchers (and research students) who specialize in the theme of the specific ESWI and have a publishable paper on that subject. They are selected by their national society. These outstanding scholars have the opportunity to meet leading researchers and other young colleagues. Thus, they can establish international cooperation at an early stage of their career. Moreover, their papers are eventually published in a special volume of EJOR devoted to their specific area of interest. Thus, EWSI can be considered to be an incubator for the future leaders of EURO. The participant societies cover the transportation expenses of their candidates while the ESWI covers the rest.

The list of past EURO ESWIs presented here gives a cross-country overview of ESWI activities over time. The guidelines for ESWI organizers appears in this Bulletin. EURO VP1 Zilla Sinunay-Stern can provide further information on request.

The deadline for submissions is December 1, 2000. We have enclosed the Guidelines for ESWI organizations.

**For further information please contact:**

Prof. Zilla Sinuany-Stern  
Department of Industrial Engineering and  
Management  
Ben-Gurion University  
Beer Sheva 84105 Israel  
Tel. 972-7-6472223 - Fax. 972-7-6472958  
E-mail: zilla@bgumail.bgu.ac.il



## Euro summer institute Guidelines

EURO Summer Institutes (ESI) are an instrument EURO has established for the encouragement of good social and working relationship between promising young O.R. scientists in Europe.

Three ESI may be organised every two years. Each ESI covers a different theme so that as many young scientists as possible will have the opportunity to participate once in their career. The duration of an ESI is normally between 2 and 2 1/2 weeks.

The main purpose of each ESI is to establish in each O.R. field a network of outstanding people who will continue to work together in the future.

Participation can be considered an honour as it is limited to a group of about 20 people, normally aged 25-35, who have significant experience in the chosen field, and are authors of at least one good paper which has not yet been published, nor submitted for publication. Applicants should submit their curriculum vitae together with their paper to their National O.R. Society, with a copy to the Scientific Committee. The National Societies select and rank (in the case of more than one) their National Candidates before passing on their applications to the Scientific Committee by the date advised. The Scientific Committee will abide by the selections of the National Societies.

No special courses are organised during the ESI but every participant gives a well-prepared presentation of her or his work as a starting point for discussion. Invited experts' lectures can be included in the programme, as can seminars and other research activities conducted by the Scientific Committee.

Papers for a special issue of EJOR (the European Journal of Operational Research) are prepared during the ESI.

EURO considers the social activity (dining and playing together) to be most important for the success of the ESI for it is through these activities that friendships develop.

EURO provides a substantial financial support to the organisers. The organisers will have to raise additional funds with the help of the National O.R. Society. Public and private sponsors should be approached.

Each ESI is an instrument for the promotion of a young O.R. scientist. It is an instrument for the future of EURO. It is expected that each National O.R. Society at its turn will contribute once to the organisation of a ESI.



Previous EURO Summer Institutes			
ESI I	Location Theory	1984	Brussels, Belgium
ESI II	Multicriteria Analysis	1985	Brussels, Belgium
ESI III	Decision making in an Uncertain World	1986	Canterbury, U.K.
ESI IV	Systems Science	1987	Finland
ESI V	Production Planning and Control	1988	Eindhoven, The Netherlands
ESI VI	Decision Support Systems	1989	Funchal, Madeira - Portugal
ESI VII	Urban Traffic Management	1991	Cetraro, Cosenza - Italy
ESI VIII	Risk Management in Complex Production and Transportation Systems	1992	Rosersberg, Sweden
ESI IX	Hierarchical Planning	1993	Mannheim, Germany
ESI X	Combinatorial Optimisation	1994	Versailles, France
ESI XI	OR Models of Maintenance	April, 1995	Greater Manchester, U.K.
ESI XII	Locational Analysis	June, 1995	Puerto de la Cruz, Tenerife, Spain
ESI XIII	Stochastic Optimisation	January, 1996	Semmering, Austria
ESI XIV	Environmental Planning	June, 1996	Piraeus, Greece
ESI XV	Production Scheduling	September, 1997	Aosta Valley, Italy
ESI XVI	Performance measurement (DEA)	August, 1998	Warwick University, U.K.
EWI XVII	Protection and exploitation of renewable resources	March, 1999	Ilonantsi, Finland
EWI XVIII	Metaheuristic and Combinatorial Optimisation	March, 2000	Lac Noir, Switzerland

## Organisation of EURO Summer Institute Guidelines

### EURO financial support

EURO provides in advance financial support (currently CHF20.000) to cover a part of the costs of organisation, accommodation and social activities. Costs above this will have to be covered by the organising society and sponsors. The additional funds will be raised by the organisers. Public institutions and private firms should be approached. The budget of an ESI is usually about three times the EURO support.

### Define the theme

Outline the theme on the application form provided.

### Nominate an Organising Committee

The committee should consist of local persons approved by the National OR Society and is responsible for all the organisational matters of

the ESI. It should also include the Chair or another member of the Committee of the forthcoming ESI. The Committee must include at least two prominent senior scientists in the field of the ESI who will be able to stay for the full duration of the Institute. The role of these scientists is to contribute to the discussion of the work of the participants, conduct workshops and assist the participants in improving their papers. It is desirable to include in the Committee a participant from a previous ESI.

### Fix the dates

Take into consideration that the ESI will be for 2 to 2 1/2 weeks, in the summer period, with accommodation usually on a University campus, and starting on a Friday night with a cheese party and social activities during the first week-end in order to develop friendly links between the participants.

**Find a location**

Conference room - Accommodation - Social activities. Fix the dead line for submitting papers to the Scientific Committee

**Important Dates**

- Submission of proposal : at least 18 months before the proposed date for the ESI.
- Circulation of information among O.R. Societies : 14 months before the ESI.
- Submission of Candidates by O.R. Societies : 4 months before ESI.
- Selection of Candidates by Scientific Committee : 3 months before ESI.
- Submission of final version of papers for publication in EJOR : 2 months after the end of the ESI.
- Submission of a Final Report on the ESI by the Chair of the Committee, to the Executive Committee of EURO : 3 months after the end of the ESI.
- Presentation of manuscripts of special EJOR number to EJOR editors : 6 months after the end of the ESI.

**Prepare announcement**

Large size and/or reduced size posters announcing the ESI may be prepared. Include the definition of the theme and other information in the announcement. Announcement should be sent to the editors of the EURO and IFORS bulletins, the editor of the EURO WWW pages, editors of the newsletters of National Societies, etc.

**Distribute the posters**

A few originals meant for photocopying should be sent to the EURO member O.R. Societies.

**Circulate the announcement**

Address it directly to potential interested persons in Universities and Research Centres, and to prominent persons working in the field of the Theme in Europe.

**Raise funds**

The more money, the more invited speakers, the more social activities. Government, institutions, foundations, firms, societies, all kind of possible sponsors could be approached. The sojourn (accommodation, meals, social activities, scientific programmes) is offered to the participants. The travel expenses to the host country is at their own costs. EURO encourages National O.R. Society to cover travel expenses of their participants.

**Prepare the selection procedure**

Each participant has to submit a paper (possibly co-authored). Only the best applications will be kept. Nobody can participate in more than one ESI.

**Prepare a social programme**

- Barbecues, Parties
- Visit of the host country (towns, nature, museums, etc.)
- Walks in open nature (some buses to be booked for travel)
- Sport activities each evening (Volley Ball, Ping Pong, etc...)
- Cooking together

**For the opening day (usually a Friday night)**

- Party

**For the closing day**

- A final dinner or banquet
- A diploma to be offered to the participants

**Think about invited speakers**

People of the host country or people being in the host country at the time of the Institute may be invited. Avoid invited speakers requesting too much travel expenses. Avoid too many speakers - remember the ESI should be centred on the participants.

**Scientific Committee and invited speakers expenses**

It is recommended that speakers are given free accommodation and board and, if possible, a lump sum to cover their travelling expenses.

**Prepare the Institute Programme**

- Timetable lectures by participants.
- Timetable invited lectures.
- Timetable working groups.
- Timetable social activities.

**Prepare the procedure for the special issue of EJOR devoted to the Institute**

Collect papers, referee them, etc. This special issue is usually published one year after the Institute, which is very short.

**Keep the selected participants regularly informed**

Be enthusiastic and dynamic.

# EURO events calendar

16-17/11/00	EWG	Financial Modelling New York, USA Molenaar@few.eur.nl
14-17/12/00	EWG	Locational Analysis Barcelona, Spain daniel.serra@econ.upf.es
09-11/07/01	EURO XVIII	Rotterdam, The Netherlands <a href="http://www.euro2001.org">http://www.euro2001.org</a>
29/07-03/08/01	EWG	Operational Research Applied to Health Services Theme: Prevention and Health Promotion in the 21st Century: Planning for Scarce Resources University of Vienna/Institute of Business Studies/Department of Innovation and Technology Management Vienna, Austria marion.rauner@univie.ac.at
09-22/09/01	ESWI XIX	Decision analysis and artificial intelligence Toulouse, France Patrice.Perny@lip6.fr Alexis.Tsoukias@lamsade.dauphine.fr <a href="http://www-poleia.lip6.fr/~perny/ESI2001">http://www-poleia.lip6.fr/~perny/ESI2001</a>

If you want to add any EURO event, please contact the EURO Office ([euro@ulb.ac.be](mailto:euro@ulb.ac.be)).

ESWI: EURO Summer & Winter Institute

EURO-k: EURO Conference

EURO Prime: EURO Prime Conference

EWG: EURO Working Group Meeting

Mini EURO: Mini EURO Conference

## **EURO XVIII**

### **18th European Conference on Operational Research**

Rotterdam, the Netherlands, July 9-11, 2001

[www.euro2001.org](http://www.euro2001.org)

### **SMART LOGISTICS AND INNOVATIONS**

Hosted by the Operational Research Society of  
the Netherlands

EURO 2001 Secretariat c/o Rob Zwidwijk  
Erasmus University, Rotterdam  
Faculteit Bedrijfskunde - P.O. Box 1738  
3000 Dr. Rotterdam  
The Netherlands

e-mail: [info@euro2001.org](mailto:info@euro2001.org)

Deadline for abstract submission: 1 March 2001

Deadline for early registration: 1 May 2001