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Inside

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The EURO-k Best Applied Paper Competition

I was honoured to be chosen as the Chairman of the jury for this year's Best Applied paper Competition, the papers to be chosen from those submitted to EURO XVI. It was also a distinguished jury, since, apart from myself it comprised two past presidents of EURO, two Gold Medalists and one past vice president, and those distinctions shared among only four people. So we waited for the papers to arrive. In fact only two were received and one only has been accepted into the competition. It will be judged at the EURO XVI conference.

One has therefore to ask what went wrong. It is true that we as members of the jury did not solicit papers personally: that was not our role. It would have been very difficult to solicit a paper and then sit in judgement on it. One has to acknowledge, however, that most journals in the world have a surfeit of theoretical papers and a dearth of applied ones. The reasons often given are that OR people working for companies have no time to provide the write with the polish that is thought to be required for publication in a journal such as EJOR and confidentiality - the best practical applications are said to be so good that they cannot be published because of the advantage that this would give to competitors.

Nevertheless practical papers are published in every issue of OR Insight. Published by the UK OR Society. None of these were submitted for the competition. We wonder why. I suppose that we must conclude that one of the barriers is the fact that the authors have to register for the relevant EURO-k conference and pay the not inconsiderable cost of travel and hotel accommodation.

One might conclude therefore, that the Prize for winning the competition - free attendance at EURO conferences does not outweigh the efforts and costs necessary for entry. My own personal view, upon which I am sure the EURO Executive Committee would like to have the views of readers, is that we should offer to one author of each paper that is accepted by the Jury free registration at the conference at which the competition takes place and free travel and hotel accommodation. In order to increase the attractiveness one should also have a two stage competition, first of all calling for abstracts which the chairman of the Jury could read and assess for practicality. He would then call for written papers, setting a word limit so that potential authors would not have to strive too hard. These papers should then be guaranteed publication in either the EURO Bulletin, or EJOR, if they went on to meet the latter's standards. Finally the prize should be more substantial - say 2000 CHF.

Maurice Shutler
Chairman of the Jury

Video-conferencing between Belgium and Italy during the last Italian National OR Congress

One of the challenges the national OR societies have to face is to enhance exchanges and cooperation between them. In view of initiating such a process, the Italian and the Belgian OR societies within EURO have organized a video-conference which took place on September 16, 1997, during the Italian National Congress in Saint Vincent, Aosta, Italy. From the Belgian part, about 30 members of the OR community, including many young researchers, attended the event in the video-conference room of ULB (Université Libre de Bruxelles).

The programme started during the opening session of the Italian conference; it had two parts, one on research policy issues and the other, a scientific part. Here are some details:

- Short introductory address by G. Gallo, President of AIRO and by M. Pirlot, President of SOGESCI-B.V.W.B. (10 minutes);
- Conference by Prof. L. Bianco, President of CNR, (the Italian Science Foundation): The reform of the public research organisations (40 minutes);
- Conference by Dr. J.-P. Contzen, former Director of the Joint Research Center of the European Commission: (30 minutes including a short discussion);
- Conference by Prof. Y. Crama (University of Liège, Belgium): Approximability of tool management problems (30 minutes).

This event received the financial support of EURO and we are grateful to our Federation for that.

Due to technical problems, the conference has not been as successful as expected. In particular, the communication by Y. Crama could not be followed on the Italian side due to bad sound transmission; hence we had to stop the conference at that stage.

Some lessons can be learned from that experiment. Ideally such conferences should be held in small or medium-size rooms (no more than 40 people); formal presentations without discussion should be avoided except if it is not possible or more expensive to invite the speaker. The technique is probably best suited for discussing or negotiating between relatively small groups and if most of the people in each group have to intervene.

Besides those reservations, it remains that the co-operation between our two societies has received an impetus with this event and we hope to be able to make new steps forward in the near future.

Marc Pirlot
Past President of SOGESCI-B.V.W.B.,
the Belgian OR Society

Which place should Operational Research occupy in Science and Technology in the 21st Century?

Paper presented at the Video-conference between Belgium and Italy

Introduction

In this paper, I would like to develop some views on how Science and Technology should develop in the next Century, what are the main challenges that they will face? It is not just an exercise in forecasting a future which would unravel itself without our intervention, it is also a reflection on how we, in the Scientific and Technological Community, we could contribute to shape this future.

The considerations I intend to develop are quite relevant to the preoccupations of those who wish to promote further Operational Research. This branch of Science - considered, I must confess, a bit recessed from today's most conspicuous disciplines - is, in my view, responding to most of the challenges to be faced by S & T in the 21st Century: could Operational Research, the Old Lady of the mid 30's become the Young Top Model of the 2000's? Those working in this field are better placed to judge, but I will present my argumentation structured in four points.

1. The Need for Interdisciplinarity

The first point, in my argumentation, related to the growing requirement in the future for interdisciplinarity in research and development. We have already noticed quite significant achievements at the interface between scientific or engineering domains e.g. biomaterials, biosensors, artificial intelligence, nanotechnology. This will most probably grow in the decades to come, not only between disciplines within the natural sciences field but also between disciplines belonging to both the natural sciences and the social sciences, the reconciliation between what C.P. Snow described in 1956 as the «two cultures», will greatly enhance the necessary dialogue between Science and Society that I will discuss in a later part of this paper. Achieving Interdisciplinarity is not always easy as it implies for scientists of specific disciplines to step down from their own pedestal.

Operational Research has been interdisciplinary from its origins associating ab initio physicists, mathematicians, psychologists and other components of both natural/exact sciences and social sciences/humanities. It was even before C. P. Snow spoke in 1956 about the separation between two cultures that operational Research led to the reconciliation of these cultures. In this respect, operational research should not have any problem in entering in the 21st Century.

2. The Influence of Non-linear Thinking

The same consideration applies to the second trend of Science i.e. non-linear thinking. «The 20th Century has witnessed a new approach to scientific thinking which is leading to new visions of physical and biological reality. I feel that we have not sufficiently apprehended the depth of the change in scientific thinking and the opportunities it offers for our intellectual, cultural development: the applications of this scientific revolution in terms of technologies have probably occulted its fundaments. We are, in my view, only at the beginning of a new era in scientific thinking; Nature should no longer be considered as a huge conservative and fully deterministic system. We may declare dead Laplace's "Demon", this concept developed by the French Mathematician who assumed that if we had a sufficiently powerful computer, we could calculate the Universe; causal events could be forecasted or traced back for each point in time in the future and in the past, if the initial state were well known.

The work of Henri Poincaré at the end of the 19th Century on celestial mechanics, the development of quantum mechanics in this century have shaken, among others, this clockwork vision of our Universe. The further development of non-linear complex systems will open new avenues in problem solving, not only for natural sciences, physics as

well as biology but also contribute to a new approach to social, economical and political problems which are as global, complex and non-linear as celestial mechanics, the evolution of life or climatic change. As the Augsburg Professor Klaus Mainzer recently put it "Mono-causality in Politics and History is a false and dangerous way of linear thinking"». We are entering with non-linear thinking in a fascinating period for new developments in Science.

Operational Research seems, from my fairly superficial analysis, to situate itself in the new approach to problem solving, even if statements such as «believing that the whole is only the sum of its parts is obsolete» might appear esoteric to those involved in the distribution of goods to supermarkets.

3. A New Organisation of Science: Globalisation and Virtuality

We are living today in a World which is more and more globalised, which is more and more interconnected physically, psychologically, economically, financially. My point is that such globalisation, such connexity will have an impact on the structure of scientific organisations, on the method for scientific work, this impact should be on the whole beneficial but presents some danger and hence this new challenge requires an adequate response.

Science has always been international but new information and communication technologies will offer an unprecedented opportunity for interactive exchange between scientists fostering creativity; it will probably lead to some reorganisation of research as well as teaching and training organisations. High speed, highly interactive multimedia links will lead to the gradual transformation of large teaching or R & D conglomerates into networks regrouping smaller nuclei of scientists and technologists, smaller in the sense that they are just beyond the threshold of the critical mass for efficiency; the concept of virtual research centres - what our Anglo-Saxons friends have started to call "Collaboratories" – is on its way and we should reflect upon it especially in the public sector, as industry has already initiated such transformation: AIRBUS uses virtual training centres for pilots and maintenance staff, RENAULT and SIEMENS AUTOMOTIVE have set up a virtual common design office for automobile components. Virtual Research Centres are not just a matter of applying the right technologies; they touch upon the future of the organisation of scientific work and allow me to develop somewhat the discussion on these elements.

Virtual Research Centres or "Collaboratories" will favour interdisciplinarity which we wish to reinforce. Researchers involved in interdisciplinary projects would be able to stay with their monodisciplinary group, ensuring in this way that the most up-to-date knowledge based on specific individual expertise is available to all. Virtuality brings also flexibility: a researcher can work at his home institution and - at the same time - keep participating in other projects; new specialists can be brought on board at short notice, depending on project needs and for flexible periods of time, increasing thus team productivity.

In today's world - and it will apply also in tomorrow's world - financial resources are limited leading to a pressure for reducing costs, virtual centres should yield an answer to this financial pressure but they would also lead to a better utilisation of human resources: unnecessary duplication of competencies at different research sites could be avoided. By enabling closer ties between scientists in a given research area, by promoting collaborations involving scientists in diverse areas, by facilitating the discussion of new ideas and concepts and the dissemination of the arising knowledge, virtual research centres could contribute to minimise the time lag between discovery and application. Another significant aspect of virtual research centres is the further development of remote access to specialised facilities increasing the utilisation time of the latter, reducing their operating costs and widening the spectrum of users, from basic researchers to industry. This might lead in turn to a new Deal between research centres and universities: the essential competitive advantage for performing research at specific research centres as opposed to research within university has been so far the interdisciplinarity and the availability of specialised facilities that Universities could not afford. If these two characteristics are available virtually in the future,

the Universities full of ideas present more attraction, notably in fields where the rate of technological and scientific change is quite high and where knowledge quickly becomes obsolete: in these fields, it is better for researchers to stay at their centre of competence - typically a University Institute - and collaborate virtually.

The characteristics of virtual research centres, described so far, appear all very favourable. Where are the pitfalls of such a structural development?
The first one is fairly obvious and applicable to the overall phenomenon of globalisation and connexity: through increased interconnection, through the aspiration, suction effect of the globalisation whirlpool, there is a distinct wish to lose individual freedom and the cultural identity which is part of the freedom. Increased exchanges constitute a unique opportunity to enrich oneself, to enhance creativity provided they do not lead to imposing a unique mode of thinking, to a unique approach to world problems. A highly interactive world should not lead to uniformity based on the least common denominator but rather to a mutually beneficial cross-fertilisation of specific cultures.

The second pitfall relates to the real danger of cutting our scientific world into two: the Scientifically Wealthy and the Scientifically Poor. The future development of Science will rely in great part, as we have just seen it, on an extensive recourse to advanced information services. The less developed countries will not necessarily benefit from all these services and this will deepen rather than close the gap between them and our highly industrially, economically and scientifically developed nations. Already overwhelmed by our technological developments, they could be denied, if nothing is done, access to entire fields of knowledge. Our reflection on the restructuration of Science should not forget the less favoured segments of our Planet. It is a major challenge, notably for Europe, Japan and the United States, to bring a response to this formidable challenge; we cannot accept that Science contributes through its absence, to the acceleration of the spiral nose-dive of underdevelopment.

The third pitfall is less apparent and could in fact be turned into an opportunity. The concept of virtual research centres, as I have just described it, favours probably elitism and emphasises individual merit: is this a good or a bad feature for the future progress of Science? Increased exchanges in the Scientific World, connexity lead certainly to a renewed demand for excellence: if isolation - the Local Village - tolerates mediocrity in Science, an Open Society - the Global Village - could not support it. Everybody should agree with this judgement, nobody props mediocrity; it does not mean that Science in the 21st Century should be reserved to a few privileged ones; Excellence in Science is not like natural resources - gold or oil - a resource limited in quantity and geographically concentrated, it is the will of the Human Being which creates it: if sincerely wished and correctly managed, Excellence in Science could be widespread. What is at stake is the balance in future scientific work between individual and collective work: in future networks, the emphasis will be placed on individuals or small teams constituting the nodes of the network, each of them trying to win pre-eminence in the network. The positive or negative appreciation of such a possible evolution depends on cultural and social attitudes, either favouring individual endeavours or preferring co-operative efforts.

In this foreseeable restructuring of Scientific Work, can Operational Research bring its contribution? My impression is that the answer is yes, notably through work relevant to the issue of future virtual research or training Centres: how to allocate in an optimum fashion resources among nodes of the network? What is the optimal size of the network? How to benchmark the efficiency of virtual centres as opposed to classical ones?

Providing the right answer is very important for the future organisation of research: either we shape ourselves our future research structures or they will be imposed on us by external forces, be they political or simply by chance.

4. The Relation between Science and Society

The picture given so far of how Science and Technology will develop in the 21st Century is very much inward-looking in the sense that it concerns only the orientations of Science and the organisa-

tion of Science. If Science were developing in splendid isolation, with no or little interaction with the rest of human activities, we could probably close our reflection at this point. But Science is no longer just a tool for satisfying the curiosity of an intellectual élite; it has a triple function: cultural, economic, societal. It responds to the demand of our Society at large to extend this knowledge of ourselves and of what surrounds us. It has become a necessary ingredient of economic growth: in a globalised market economy, Technology which transforms into means of action the knowledge provided by Science, contributes largely to the competitiveness of nations. Science is also a powerful tool to satisfy societal needs, be it the protection of our health, the preservation of our natural environment or the improvement of communication between individuals. This triple function gives to Science a growing role in Society and hence more responsibility in a knowledge driven society.

How can we orient Science in such a way that it will discharge this responsibility and respond to the expectation of Society?
Beyond pursuing its essential role in promoting economic welfare, in responding to basic preoccupations such as the fight against diseases, or the management of a natural environment yielding a certain quality of life, Science and Technology in the 21st Century should contribute to the solution of more general problems which are not entirely dependent on their specific activities but could benefit from their inputs. These more general problems relate to the management of our Society in the future: this represents a major challenge for the Century to come, a Century in which, in order to avoid social disruptions, Society will need to respond imperatively to three management issues:

- the management of change corresponds to the capability of our Democracies to master the ever faster evolution of our Society in all its aspects, technological progress being a significant one. The emotional fondness for decision schemes of the Past, the self-preservation instinct of social and political structures constitute a heavy handicap for change. Time has become a decisive factor in our Society, to apprehend too late an evolution is equivalent to not apprehending it at all;
- the management of complexity requires appropriate solutions for running a globalised World full of natural and societal interaction. Let us give as examples: how to shape an adequate response to the issue of climatic change?, how to prevent frost in winter paralysing the railways of a technologically advanced country such as France, or, more recently, how to avoid the fall of a single crane on a main railway line affecting the holidays of 8 million Italians?;
- the management of risk, is aimed at increasing the acceptance by our citizens of a basic truth, i. e. that human activity cannot be performed without a minimum risk. Zero risk does not exist but it is hard to make this fact believed in a Society which no longer shares the fatalistic attitude typified by the Greek Poet Homer (around 850 BC) who accepted passively that the person who entered his home could either be a friend or a robber: it was up to the Gods to decide.

How should the Scientist meet his or her part of the challenge and contribute in this way to diminishing rejection? How can Operational Research bring its share of responses?
The burden of managing change lies more with politicians, decision-makers, and the public than with scientists: the danger in this respect could be a trend towards slowing down scientific and technological progress, based on the following reasoning: cultural and social attitudes do not adapt themselves fast enough to the rapid change of Science and Technology; in order to give time for this adaptation, let slow down Scientific and Technical progress. Such an attitude would have very negative consequences not only for Science but also for Society. Scientists should help in the quickening of the adaptation process through increased dialogue with other actors on the social and economic scenes.

Did the Operational Research community make enough efforts to show all the practical, economical and societal impacts of its Research impacts, which are real but perhaps somewhat hidden?
With regard to the management of complexity, from the origin of Operational Research, this domain has been at the heart of this issue and this trend should be pursued in the future.
The greater degree of inter-connectedness of our Society which makes it even more non-linear and

complex, requires an increased attention of all those involved.

With regard to the management of risk, again this is an area which is familiar to Operation Research. Risk analysis, minimisation and mitigation are fields where the intervention of Science and Technology could bring significant results. The most difficult part of the scientific contribution to the management of risk relates to the correct description, in explainable terms for the public and for the decision-makers, of the nature and the level of risk involved in a certain activity. When dealing with risk issues, scientists generally raise up the irritation of the decision-makers who insist upon clear-cut answers and yet obtain replies from scientists starting with «to the best of my knowledge...». The best of his or her knowledge, even if it reflects the integrity we have just lauded as a virtue, is not what the decision-maker expects. The latter is faced with uncertainty to an extent which is generally underestimated, and furthermore, as our democracies have less and less tolerance for risk, he or she has the duty to minimise the uncertainty hence the quest for firm statements from Science. Take the example of climate change: for the Head of State or Government who has to take decisions on the future energy policy of his or her country, he or she has already to face the uncertainty of the future exchange rate of the dollar, the volatility of Peace in the oil supply area of the Gulf, a potential political change in Russia cutting off gas supplies. What if, on top of this, scientists disagree or at least are unsure about the impact of greenhouse gases? The reaction of politicians to such ambiguity is generally defensive: it could lead to the so-called «no regret policy» or precautionary policy i.e. to follow a cautious policy line: an absence of scientific evidence, the course to be followed is the most prudent one, minimising risk, avoiding to take too radical decisions which could be regretted subsequently. Such an attitude does not favour change but at least it is not too damaging for Science and Technology. What is much more questionable is the reaction of politicians leading to over-regulation. Indeed, the desire to reduce risk sometimes leads political leaders to the promulgation of vast sets of regulations. Over-regulation may become a threat not only to scientific progress but also to freedom and democracy. Are we sure that a helpful product such as Aspirin would pass today's scrutiny of drugs? A recent example lies in the June 1997 proposal of law by the German Federal Government to inflict fines or prison sentences on the passengers of aircraft using their laptops during flight. Why not explore scientifically better ways to ensure protection of flight equipment against electromagnetic interference rather than depriving passengers of the possibility of working or playing during not very productive flying hours?

Overall minimisation of risk taking into account all aspects including sociological ones constitutes an area where interdisciplinary sciences, and operational research falls into this category, could bring a useful contribution.

Conclusion

The need for Interdisciplinarity, the influence of non-linear thinking, a new Organisation of Science, the relation between Science and Society with its impact on the management of change, the management of complexity, the management of risk constitute essential issues for an harmonious progress of Science and Technology in the 21st Century.

Operational Research can certainly contribute to a satisfactory response to these issues if the necessary attention is devoted to it by actors in this field. Science remains a great adventure, an adventure which remains rewarding for those who participate in it, what is important is to ensure that Science develops itself within the frame of our modern Society, not on the side of it.

Let me quote Albert Einstein in closing these remarks
«The concern of man and his destiny must always be the chief interest of all technical effort, Never forget it among your diagrams and equations».

J. P. Contzen
Special Adviser
European Commission

Call for Papers

11th Mini-EURO Conference on "Artificial Intelligence in Transportation Systems and Science" and 7th EURO-Working Group meeting on "Transportation"

2 - 6 August 1999

Helsinki University of Technology
Transportation Engineering - Espoo, Finland

Venue

The Conference and Meeting will be organized at the Helsinki University of Technology. The University located in the attractive Otaniemi district, 10 km from the city-centre of Helsinki (15 minutes by bus).

Scope of the 11th Mini-EURO Conference (3 - 6.8.1999)

The Conference will be the post-serial Conference to 9th Mini-EURO Conference organized in University of Belgrade in Budva September 1997. The aim of the Conference is to bring together research scientists and students in the field of artificial intelligence in transportation engineering and science. The scope includes all aspects of AI. Especially, the program committee is interested in papers concerning the applications of **fuzzy logic, neural networks and genetic algorithms** applications in transportation and traffic.

The following is a preliminary list of some the topics that will be discussed in the Conference:

Scope of the 7th EWG-meeting (2 - 3.8.1999)

The aim of this meeting is to gather all interested scientists in the field of artificial intelligence in transportation science to discuss topics of this very specific theme. Some workshops with the plenary presentations will be organized. All Conference participants are welcome to the EWG-meeting to discuss the problems, research needs and cooperation.

Submission of papers and time schedule

Those wishing to give a presentation should send an Abstract paper (one page) to the contact address by **30 September 1998** for refereeing. The notification of acceptance or rejection will be given in November 1998. The publication of final papers will be done in two-phases. An extended abstract of all accepted papers will be published in Conference Proceedings (max. 5 pages), and the selection of full papers (7500 words) will be published

▪ Transportation and Traffic Modeling ▪ Transportation Planning ▪ Network Optimization ▪ Simulation ▪ Demand Modeling and Estimation ▪ Traffic Assignment ▪ Traffic Control ▪ Traffic Management ▪ Traffic Analysis and Measurements ▪ Traffic Flow Theory ▪ Public Transport ▪ Expert Systems ▪ ITS

after review in some publication series. The Dead Line for Conference Proceedings will be **15 April 1999**. Authors should bring the full versions of their papers to the Conference and hand them to Organizers. Full papers that are not available by the Conference can not be included to the final review process.

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Lappeenranta University of Technology

Lic.Tech. Jarkko Niittymäki,
Helsinki University of Technology, Coordinator.

Proceedings

The Proceedings of the Conference will be published in book form and will be available to the delegates at the time of registration. The authors, who want their full papers reviewed for publication, are invited to bring full paper copies with them to the Conference.

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Nicolaus Copernicus
The man who moved the Earth

Scrolling through the Grolier Electronic Encyclopaedia I found a reference to Copernicus' heliocentric theory. His important discovery was that a simpler explanation of the practical observations of planetary motion required the Sun to be at the centre of the Universe and the Earth & other planets to revolve around it. Subsequent developments by others astronomers - Kepler, Galileo and Newton - built upon this theory.

Although Copernicus' work was in astronomy, it directs us to four basic lessons which carry over into other areas of research. They are:

1. Question assumptions made by other researchers.
2. Determine the sensitivity of your findings to any assumptions you have made.
3. Develop the simplest model that is consistent with your observed facts.
4. View your problem as a member of a set of similar ones.

The first three lessons are fairly obvious; the fourth lesson is less so.

The Earth rotates around the sun...

The essence of Copernicus' idea was that by removing the assumption that the Earth was at the centre of the universe, the Ptolemaic system of planetary motion could be modified to better account for the observed motions of planets. So the first lesson is:

1. Question assumptions made by other researchers.

Assumptions often take the form of constraints, some of which will turn out to be fuzzy or easily removed at low cost. When cybernetics holds that "*when a constraint exists it can be used to advantage*" it refers only to "real" constraints, not to "false" ones.

Real constraints play an important part in all scientific investigations and their contribution to modelling cannot be over estimated. However, constraints can find their way into models in a more subtle manner which can lead to false results being obtained. *Beware of the false constraint.*

A consequence of the first lesson is the second lesson:

2. Determine the sensitivity of your findings to any assumptions you have made.
A consequence of the second lesson is that, in the spirit of Karl Popper, we should double check all our data, parameters and algebra to avoid them being falsified by another analyst.

The quality of data is variable. Unless you can carefully check its antecedents, it will always remain suspect. Likewise, any results produced by a model that has not been properly validated against reality, will be questionable.

The heliocentric theory was simpler than the geocentric cosmology...

By making the break with the classical system based on the celestial phenomena and supported by Ptolemy and Aristotle, Copernicus was able to produce a simpler and more accurate model of the planetary system.

This leads to the third lesson for researchers:

3. Develop the simplest model that is consistent with your observed facts.

Early in your project you will have agreed a clear and unambiguous goal with your client. You may have transformed this goal into a number of postulates, which can be tested to provide the understanding you need to meet the goal. A key aspect of the third lesson is that in both your analysis and modelling you should avoid unnecessary complications.

The Earth is a member of a set of planets...

The last lesson I want to bring to your attention is perhaps less obvious than the first three. When Copernicus deduced that the Earth was not at the centre of the Universe he was also asserting that, astronomically speaking, *it should be treated like any other planet*. In passing, I mention that black holes were not discovered until over 400 years after Copernicus' death.

The idea that your particular object, event or problem, should be viewed as a member of a set, can be useful in finding solutions to problems. The fourth lesson is:

4. View your problem as a member of a set of similar ones.

For the word "problem" you can also read "entity", which widens the lesson's area of application.

A final tribute...

Stephen Hawking, in his "Brief History of Time", paid tribute to Copernicus by stating that his work led to the recognition that the universe had no natural boundary.

Despite the relative simplicity of the instruments that he had available, Copernicus moved science forward in a very positive way. I am sure he would have endorsed the four lessons; I hope you do.

E. A. Field

EURO events calendar

24-27/06/98	EWG	Decision support systems, Granada, Spain jelassi@insead.fr
6-10/07/98	EWG	EUROFUSE, Fuzzy sets: sessions at the Seventh Internat. Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, Paris, France Bernard.DeBaets@rug.ac.be jfodor@mszi.gau.hu
7-9/07/98	EWG	Project management and scheduling, Istanbul, Turkey pms98@boun.edu.tr
8-10/07/98	EWG	PAREO, Parallel processing in operation research: PAREO 98, Versailles, France pareo98@prism.uvsq.fr
12-15/07/98	EURO-K	EURO XVI, Brussels, Belgium euro@mathro.fpms.ac.be http://image.fpms.ac.be/euro16.html
12-15/07/98	EWG	EUROFUSE, Fuzzy sets, Brussels, Belgium Bernard.DeBaets@rug.ac.be jfodor@mszi.gau.hu
12-15/07/98	EWG	ESIGMA, Special interest group on multicriteria analysis, Brussels, Belgium tjstew@maths.uct.ac.za
12-15/07/98	EWG	Project management and schedulling, Brussels, Belgium lavt@alfa.ist.utl.pt or cesur@civil.ist.utl.pt
12-15/07/98	EWG	Environmental planning, Brussels, Belgium pappis@unipi.cc.unipi.gr http://www.unipi.gr/gaia/gaia.htm
12-15/07/98	EWG	WATT, Automated time tabling workshop, Brussels, Belgium ekb@cs.nott.ac.uk j.a.m.schreuder@math.utwente.nl
12-15/07/98	EWG	DEAPM, Data envelopment analysis and performance measurement, Brussels, Belgium c.s.Sarrico@warwick.ac.uk
12-15/07/98	EWG	HOP, Hierarchical organisational planning, Brussels, Belgium schneeweiss@bwl.uni-mannheim.de
19-24/07/98	EWG	OR applied to health services: monitoring, evaluating, planning health services', Rome, Italy orahs98@pow2.sta.uniroma1.it
16-26/08/98	ESWI	Data envelopment analysis: University of Warwick, UK c.s.Sarrico@warwick.ac.uk

EURO events calendar

8-10/09/98	EWG	MODEST, Modelling of economies and societies in transition, Lancaster, UK nahorski@ibspan.waw.pl owsinski@ibspan.waw.pl
9-11/09/98	EWG	Transportation, Goteborg, Sweden mipat@math.chalmers.se
24-25/09/98	EWG	MCAD, Multicriteria aid for decisions: 48th Meeting of MCAD : Quebec, Canada Jean-Marc.Martel@fsa.ulaval.ca
8-10/10/98	EWG	Financial modelling, Krakow, Poland Molenaar@few.eur.nl
26/02/99 - 14/03/99	ESWI	Protection and Exploitation of Renewable Resources, Ilomantsi, Finland Tuula.Kinnunen@tukkk.fi
5-6/03/99	EWG	HOP, Hierarchical organisational planning, Mannheim, Germany schneeweiss@bwl.uni-mannheim.de
Spring 99	EWG	Financial modelling, Valencia, Spain Molenaar@few.eur.nl
25-28/05/99	EWG	EUROFUSE, Fuzzy sets: Joint EUROFUSE - International Conference: Joint Meeting of the EURO Working Group on Fuzzy Sets and Second International Conference on Soft and Intelligent Computing, Budapest, Hungary Bernard.DeBaets@rug.ac.be jfodor@mszi.gau.hu
23-29/06/99	EWG	Locational analysis: ISOLDE VIII Coimba/Estoril Portugal, coutinho@inescc.pt antunes@dec.uc.pt http://www.dec.uc.pt/isolde8
2-3/08/99	EWG	Transportation: 7th meeting, Espoo, Finland bielli@iasi.rm.cnr.it
3-6/08/99	Mini EURO	Mini Euro Conference on Artificial Intelligence in transportation and science, Espoo, Finland jarkko.niittymaki@hut.fi
XY/09/00	EWG	Transportation, Rome, Italy bielli@iasi.rm.cnr.it http://www.iasi.rm.cnr.it/~ewgt/index.htm

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

ESWI : EURO Summer & Winter Institute
EURO-k : EURO Conference
EWG : EURO Working Group Meeting
Mini EURO : Mini EURO Conference