

NEWSLETTER

September 2001

Operational Research Society of New Zealand (Inc.)
PO Box 6544, Wellesley St. Auckland, New Zealand
<http://www.orsnz.org.nz>

Late breaking news: Sir Gil Simpson to speak at Banquet TWENTY NAUGHT ONE, page 2.

Two-way communications

Guest Editorial, by Stein Wallace

Assume an electric utility company contacts you and says: We are now able to communicate with our customers such that we can deliver hourly electricity prices one day in advance and measure hourly consumption as well. What possibilities does that open up for us?

New thoughts? Well, the first large-scale installations of such equipment in the residential market have taken place. What can we, as



operational analysts offer in this situation? In particular, can we offer views that are better, or at least different, from what others can offer? Let us try on a few hats.

hourly prices and measurements to give your company a competitive advantage?

What if you represent the government in a regulated or deregulated market and look for means to reduce consumption or peak loads?

What if you put on the hat of the consumer in a competitive market? How could the consumer use the new possibilities to his advantage?

If you feel you have come to grips with these questions, put on the hat of the regulators and ask yourself: What should be the rules of game in hourly prices and measurements? Who owns the information? Who can use the information? Who should own the equipment? The company or the consumer? Can we learn from how the telephone services are organized? The questions are many. The answers so far are few.

(continued on page 7)

What if you represent a utility company, which is an old-fashioned regulated monopoly? Unless everything is perfect, you are likely to face one out of two problems (or both):

- You are energy constrained, meaning that it is the total amount of available energy that is the main problem. This is typical in hydro-based systems.
- You are capacity constrained, meaning that it is the peak demand that is your main problem. This is typical in thermal systems.

How can you use your ability to measure not only the total consumption of a household, but also the profile over the day, to facilitate solutions to the above problems?

What if you represent a utility company in a competitive market? How could you use the

Headlines

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Newsletter publication dates are March, June, September, and December. Submissions deadline is the 15th of the month for the following month's issue. Send submissions by email in MS Word to the Newsletter editor, John F. Raffensperger, newsletter@orsnz.org.nz.

ORSNZ CONFERENCE TWENTY NAUGHT ONE

The University of Canterbury's Department of Management is pleased to host Conference TWENTY NAUGHT ONE of the Operational Research society of New Zealand.

News TWENTY NAUGHT ONE

Recent high-level research has shown that early submissions to the ORSNZ Conference are beneficial for liver function. Get your papers in!

See the papers submitted on the Conference web site, <http://www.orsnz.org.nz/conf>. The first ones are from prestigious authors.

Our plenary speakers will be Stein Wallace and Lawrence Wein. The late-breaking news deserves its own headline:

Sir Gil Simpson to speak at Banquet TWENTY NAUGHT ONE

The Conference TWENTY NAUGHT ONE organising committee is pleased to announce that Sir Gil Simpson has agreed to speak at the Banquet.



Sir Gil Simpson is Founder and Chief Executive Officer of Aoraki Corporation Limited, an international software company headquartered in Christchurch, New Zealand. He is an

internationally recognised adviser and speaker on information technology, particularly in the area of electronic commerce.

Awarded a knighthood in 2000 for his services to the computer industry and the broader community, Sir Gil was named by the New Zealand Computer Society in October 2000 as most outstanding contributor to computing in New Zealand over the last century.

Sir Gil is the creator of LINC, a mainframe software development tool that has been New Zealand's most successful software export to date. His company is again achieving international success with JADE, another software programming technology.

Continued Call for papers

We welcome papers in operational research and decision modelling, especially papers on practical applications. As of this writing, papers from several prestigious writers have already been submitted.

Abstracts - submission deadline is 28 September 2001

Submit your abstract of 200 words or less, in plain text, by email to the Conference Proceedings editor, John F Raffensperger, j.raffensperger@mang.canterbury.ac.nz. We will notify authors of acceptance by 6 Oct 2001.

*When are abstracts due?
Who is the Early Bird?*

Final papers – submission deadline is 3 November 2001

Following acceptance of your abstract, we will ask you to submit a full-length paper for publication in the Conference Proceedings. These proceedings will be distributed to all participants and to all ORSNZ members.

Full-length papers should be submitted by email in PostScript (ps) or Adobe Acrobat (pdf) format and should be no more than 14 single space typed pages when printed. For style and format, please read the detailed guidelines on our web site <http://www.orsnz.org.nz/conf>.

Early bird discount – save by registering before 27 October.

*John F. Raffensperger, Univ. of Canterbury,
j.raffensperger@mang.canterbury.ac.nz*

Sponsors TWENTY NAUGHT ONE

The Conference Organising Committee is very pleased to announce that the corporate sponsors of the TWENTY NAUGHT ONE include PA Consulting (principal sponsor), Charles Rivers Associates (principal sponsor) and Hoare Software.

We are gratified to be in partnership with these excellent firms.

Free money! Student Grants TWENTY NAUGHT ONE

Full-time students who are giving a paper at the above conference are eligible for travel assistance from ORSNZ. Students who plan to give a paper should send a letter to the president of ORSNZ to apply for travel assistance. Their letter should be countersigned by their supervisor or Department Chair, confirming that they are enrolled for a full-time course.

Les Foulds, President, president@orsnz.org.nz

Young Practitioner's Prize TWENTY NAUGHT ONE

The Young Practitioner's Prize competition is open to authors who, on 1 December 2001, are under 25 years of age. Papers must be singly authored. The prize will be awarded at the ORSNZ Conference TWENTY NAUGHT ONE.

Canterbury Reunion TWENTY NAUGHT ONE



The Department of Management is planning a reunion of honours/masters/PhD graduates. The Reunion will be held in conjunction with this year's ORSNZ Conference TWENTY NAUGHT ONE. Currently, we are thinking of three activities:

- a Saturday afternoon session at the ORSNZ conference, reflecting on what value you gained from your time here at Canterbury, and how we can do better in future.
- a Saturday night informal dinner at the Sign of the Kiwi,
- and possibly a Sunday morning BBQ brunch at the University Staff Club.

Please let us know what you think of these options. .and any other ideas you may have. (By the way, we are not planning anything too expensive, and will be seeking sponsorship to keep the cost down, too. More details to come.)

Missing persons report! The Department of Management is building an alumni database to

help us keep in touch with graduates, and for graduates to keep in touch with each other. See your friends on the MSCSI Alumni webpage at <http://www.mang.canterbury.ac.nz/alumni/msci/>

We would be interested to know where you work, whom you work for, and what you do there. And please advise us if you would rather *not* have you have your contact details available on the website. You can email these details to mscialum@mang.canterbury.ac.nz.

There are many graduates whom we do not have email addresses for. If you have an address for anybody on the following list, please send it to mscialum@mang.canterbury.ac.nz.

Missing Canterbury graduates (1975-2000)

Ahern, Anthony. Anderson, Kim. Anderson, Phillip. Anderson, Robert. Arlidge, Peter. Baker, Paul. Beckett, Debra. Bell, Andrew. Berry, Gary. Boon, Michael. Bryant, John. Burnett, Colin. Burrows, Wayne. Callander, David. Cameron, David. Chan Hoong Sing, Benjamin. Cheng, Toek Waa. Christian, Owen. Chu, Khim Hoong. Colledge, Neill. Collingwood, Gordon. Cosseboom, Peter. Crosbie, Peter. Curnow, Nicholas. Dee, Philippa. Deely, Paul. Dempster, Ian. Didham, Gabriel. Dredge, Lesley. Dunkley, Catherine. Eaves, Andrew. Empson, Wayne. Francis, Benjamin. Freeman, Natasha. Furness, Craig. Gargiulo, Patrick. Gaudin, Andrew. Genet, David. Goodare, David. Gourdie, Noel. Grayburn, Ian. Greer, Nicola. Grundy, Timothy. Hamilton, Martin. Hartshorn, Andrew. Hesterman, Dorothy. Hewson, David. Hodges, Guy. Inch, Julian. Jackson, Ian. Jankowski, Daniel. Jefferson, Timothy. Johnson, Kelvin. Kol, Carolina. Lau, Bh. Lee Weng Heng, Patrick. Leong, Lim. Lightbourne, Mark. Lim, Swee Boon. Looney, Joanne. Lovatt, David. Macgregor, Alister. Mackenzie, Nicola. Maclean, Gillis. Mangos, John. Manning, Gregory. Mcculloch, Shirley. Mcgiven, Emma. Mehrtens, Gregory. Melton, Fiona. Mercer, Neville. Moore, Aaron. Moore, Michael. Moore, Philippa. Moore, Thomas. Moreham, Richard. Morris, Dean. Mullon, Guy. Murphie, Craig. Nihoniho, Antony. Nissen, Kirsten. O'brien, Peter. Olds, Wayne. Ooi, Soo Hock. Patterson, David. Radford, Sheryll. Rathbun, John. Read, John. Robinson, Paul. Rusli, Fransiskus. Ryall, Stephen. Simon, Kieren. Smith, Richard. Somerville, Brendon. Taylor, Christopher. Taylor, Conway. Templeton, Warwick. Too, Chie Loung. Toop, Andrew. Tran, Hung Viet. Tucker, Elizabeth. Watson, Peter. White, Bernard. Whitmore, Frank. Woods, Ross. Yang, Miao. Yap, Foo Kuoon. Yates, Philip. Yeoh, Guan Teik. Young Mo Bik, Virginia. Young, Suzanne.

Summer Projects – Call for Nominations

The Society will pay, in the first instance, a sum of \$5,000 towards the expenses of projects to be carried over the summer of 2001-2002.

Criteria for selection are the worthiness of the cause, the applicability of OR, the likeliness of successful completion within the time frame available, the fact that the project concerns a not-for-profit organization, and the fact that the project would not be possible without the funding of the Society.

Interested project supervisors will need to find a student, (or other persons to carry out the work), volunteer to provide advice and guidance to the workers, and submit a proposal to Les Foulds, President, president@orsnz.org.nz.

A selection Panel, appointed by the President, will allocate funds at its discretion.

The supervisor must publicize the results of the work. At the least, a report must be submitted to the Society Newsletter.

Graeme Everett proposed this project.

Canterbury News

Ross James is away on sabbatical in Japan. Shane Dye is pitching in as Management Science Subject Coordinator. Terri Green is also on sabbatical in the UK.

We have the pleasure of hosting Lawrence Wein, an ORSNZ Visiting Lecturers, and an Erskine Visitor to the University of Canterbury. Larry is married to Christchurch's own Anne Spence Wein, a Canterbury MSCI Honours graduate. Larry and Anne met in the PhD program in the Department of Operations Research, Stanford University.



Larry and Anne Wein and family

Visiting Lecturers In 2001

The ORSNZ Visiting Lecturers this year are Professor Stein W. Wallace and Professor Lawrence Wein. Both will present a plenary address at the Annual Conference in Christchurch, late this year. They will also visit universities in Auckland, Hamilton, Wellington, and Christchurch.

Stein W. Wallace is the Professor of Quantitative Logistics at the Institute of Economics, Molde College, Norway. He received a Ph.D. in Informatics from the University of Bergen in 1984. His primary research interests are in stochastic programming, with applications in energy and finance. He is currently the Associate Editor of the *INFORMS Journal on Computing*. His NZ contact is Andy Philpott, Auckland, a.philpott@auckland.ac.nz.

Lawrence M. Wein is the DEC Leaders for Manufacturing Professor of Management Science, in the Sloan School of Management, MIT, USA. He received a Ph.D. in Operations Research from Stanford University in 1988. His primary research interests are in manufacturing and medicine. He is currently the Editor-in-Chief of *Operations Research*.

Professor Wein's NZ contact is Don McNickle, Canterbury, d.mcnicke@mang.canterbury.ac.nz

Les Foulds, President, ORSNZ

Wellington News

The Wellington Branch has continued its busy year. As you will have read in the June issue of the *ORSNZ Newsletter*, we started the year with presentations by Pamela Mazoyer on the "Learning Organisation" and by Dr. Tapas Sarkar, who recently officially retired after working at Victoria University for 22 years.

Sue Paul gave the presentation at our June meeting. She gave a case study on "Operational Research Techniques in the Fishing Industry."

In her talk, she described how a concentration of fish can be modelled as a coherent school with definite edges. Given trawl data, the location of this school and its density can then be estimated. Trawls consist of start and finish coordinates and are assumed to have a fixed length. Each trawl makes a catch of fish, which depends on the overlap of the trawl into the fish

concentration as well as the relative density of the school.

She told us how she used Bayesian techniques to estimate the location and density of the fish concentration using the observed catch data. Simulated data sets were used to fit circular and elliptical schools and to estimate their densities. Locations and densities of multiple circular and elliptical schools were also estimated by extending the single school model. Her talk nicely demonstrated the synergies between OR and statistics.

We were extremely fortunate to have Professor J Scott Armstrong to speak on "Expert Systems for Forecasting" at our July meeting. This was less statistical than I had expected. He talked more about rule-based forecasting and bootstrapping methods and showed how these compared favourably with a variety of other commonly used methods.

His presentation was witty, challenging and very useful. Again we were almost overwhelmed by the success of the event and having over sixty people to the lunchtime event.

Scott is widely recognised as one of the most influential researchers in marketing and management science. Although he has been in the Department of Marketing at The Wharton School since 1968, his interests and expertise extend far beyond marketing alone. He has published extensively in prestigious journals on marketing, scientific methods, strategic planning, education, and social responsibility.

*... groomed ski trails...
Lapland ... wild reindeer ...
views into Norway... Russia*

He is a major authority on forecasting methods, and has just finished work on a new book, *Principles of Forecasting: A Handbook for Researchers and Practitioners*, which Scott has edited and also contributed nine of the 32 papers. An associated project is Scott's *Forecasting Dictionary*.

Scott is author of *Long-Range Forecasting: From Crystal Ball to Computer*, the most frequently cited book on forecasting methods, and recognised as the standard work on the subject. He is also founder of the Forecasting

Principles website,
<http://fourps.wharton.upenn.edu/forecast/>.

Furthermore, Scott was a founder of the *Journal of Forecasting* and the *International Journal of Forecasting*, as well as the International Institute of Forecasters. He is currently an editor of six journals.

We are planning three more meetings this year.

As a matter of policy, the Wellington branch will in future be attaching a membership form to all its email communications and will be providing the forms at all branch meetings. We are also advertising the conference and ORSNZ web page on all communications.

We have a good committee, Vicky Mabin, John Davies, and Yu Hayakawa, who have worked hard to make this year a success. I have been proud to be associated with them. Unfortunately for us, Yu has started her sabbatical, so she has had to resign from the committee. Good luck Yu. We'll miss you.

David Boland, Chairman, Wellington Branch

Waikato News

John Buchanan has moved to a part-time position in Management Systems, with 20% being within the department. The rest is a career change – 80% with Chapel Hill Community Church, as part of a church staff team. Can't be harder than managing academics!

Jim Corner went on a three-week trip to Paris, Helsinki and Lapland, Finland. The purpose of the Paris part of the trip was to liaise with two of his co-authors on several works in progress. Paris was reported to be fantastic, despite the cold, rainy weather and a museum workers' strike. The trip north to Lapland (Saariselka, way up in the corner of Finland, above the Arctic Circle) had two purposes - to give seminars to and begin collaborative work with the Finnish Forestry Research Institute and the Finnish Environmental Institute, plus cross-country skiing! The seminars went well and there is much scope for collaboration, but the skiing was reported to be magic. The sun set just three hours per day, but the northern lights were fantastic during those three hours. There are hundreds of kilometres of groomed ski trails in this part of Lapland that take skiers into herds of wild reindeer and allow for views into Norway and Russia.

Jim taught a mini-course on decision making to doctoral students in the Systems Analysis Laboratory at the Helsinki University of Technology. He also held the Beer game, a management simulation game designed to teach students about the field of systems dynamics.

*...tragedy struck
on the way home...*

Les Foulds has also been busy overseas. His trip first landed him in Perth, where he arranged to be hosted on his next sabbatical. Then it was on to England; first to Southampton to start a new project, on the scheduling of the harvesting of renewable resources. This visit was a bit disrupted at first, as one of his hosts was unexpectedly absent, due to a pressing family matter. However, Les's other old mates came through and it was a useful week. He then went to Loughborough, for a fifth visit in ten years. It was nice to see staff there again who had visited Systems at UW. Les completed the first phase of work with them, on bookmobile routing, which was very satisfying.

The final stop was at the Centre for Higher Studies (SHS) in Oslo, where he spent four months last year. The purpose of going there was to "turn the corner of the sock" on joint work on cable assembly in the automobile industry. This is part of a yearlong international project at SHS on decision making under uncertainty. The final night at SHS featured a glorious Banquet, the main dish of which was NZ venison. After a productive time away, tragedy struck on the way home, with Les contracting Legionnaires' disease in one of the transit lounges. After a very scary two weeks, he is going to survive, and is finally back to about 80% of normal health.

Auckland News

It's a busy time at Auckland with our year-4 students working hard to finish their research projects. Topics currently being written up range from faster shortest path algorithms and electricity network repair through to rostering of ambulance officers and more robust scheduling for Air New Zealand. The students will be making presentations on their work in early October; if you are interested in coming along, then check out the Engineering Science website www.esc.auckland.ac.nz for more information.

Andy Philpott is currently visiting Berlin as a plenary speaker at a stochastic optimisation conference. Jeff Pritchard has recently returned from Wellington where he attended a meeting on the electricity market. Mikael Ronnqvist (ex-ORSNZ treasurer) presented joint work undertaken with Andrew Mason and colleagues on supply chain optimisation at the recent EURO conference in Rotterdam. Mikael must have made an excellent presentation; this work won the "EURO Excellence in Practice Award".

Andrew Mason a.mason@auckland.ac.nz

ORSNZ visits the NZAMT7 Conference

One perennial problem for us in the world of OR/MS is explaining to people what it is we do or teach. Linked with that is the lack of young children wanting to be a 'Management Scientist' as much as a fire-fighter, doctor or police officer. In a minor effort to increase the profile of the profession, I have begun a foray back into the world of mathematics teaching, in the assumption that a timely encouraging word from a mathematics teacher to a capable and interested student might send him or her our way. This has mainly been in the Christchurch area to date, giving talks and providing posters sponsored by the Department of Management at the University of Canterbury to members of the Canterbury Mathematics Association.

In June the NZAMT (New Zealand Association of Mathematics Teachers) conference was held in Wellington. I offered my services to the ORSNZ to present at the conference and further spread the word about OR/MS. I attended for one day and gave a one-hour workshop on "Management Science/Operations Research as a career option for mathematics students. An overview of the nature and application of management science and operations research and its relevance to maths teachers." Things started well, as the first person I chatted to has a daughter who could well want to take OR/MS.

The presentation itself was well received, with some teachers wishing they had known about our discipline some years ago. (Perhaps we need a one-year diploma course for Maths teachers wanting a career change!) I spent the first half hour talking about OR/MS in general, the process, and careers. The second half I used to introduce the EOQ model as a neat, not

physics-based example of simple calculus. The intention is that it would be useful to teachers of senior classes, to provide a different use for calculus. It was interesting to me to compare their response and input to that of the first year tutorial group to whom I had presented the same problem earlier this year. The teachers were much more aware of the practical implications. The teachers were most appreciative and would welcome a booklet of similar examples. At Canterbury, we have been toying with this idea for some time now.

Following the workshop, I gave away posters advertising "Management Science/Operations Research, Mathematics for fun and profit" and in the following week, I had several requests for information from students of the teachers who attended the workshop.

Suggestions. It would be helpful for the ORSNZ to have posters and brochures to give teachers, parents, students etc, and to put in conference packets at conferences such as the NZAMT. A brochure for school students would outline the discipline, and give advice as to where to study.

A booklet with examples of the use of OR/MS would be useful to teachers and further the recognition of the area.

An ongoing link with the NZAMT would benefit the Society in its aim to promote Operational Research and Management Science in New Zealand in both academic and industrial aspects.

Thank you to the ORSNZ Council for funding my attendance at the conference.

Nicola Petty, N.Petty@mang.canterbury.ac.nz

*An ongoing link
with the NZAMT
would benefit the Society...*

Two-way communications (continued)

New Zealand was among the first to deregulate the wholesale part of the electricity business. Norway, and later the rest of the Nordic region, followed quickly. In both countries, the operational analysts have played a role in the developments, maybe even more so in NZ than in Norway. What is it that we are (ought to be) good at? I think our main advantage is the ability to take a look at a new problem with open minds and pick the appropriate tools from our toolbox. I think we did quite well on the wholesale deregulation. Will we also be able to be of importance in the end-user market? I think that is important to us, not only in NZ and Norway where the situations are rather special (you being disconnected from the rest of the world, we having 100% hydro-based production), but in all markets where we move from central planning or control to deregulation and distributed decision making. Do we know how to model distributed decision making without central control? I am not sure we do, but we should ...

It has been a pleasure for me to interact with OR-analysts from NZ over many years. I was extremely fortunate to have Shane Dye spend four years with me in Norway just after he finished his PhD. Last autumn, Les Foulds spent six months with me at The Centre for Advanced Study in Oslo, teaching me how to model discrete problems. And just now, Andy Philpott is hosting one of my doctoral students, Erling Pettersen, who is financed by the Norwegian electricity producers to study the end-user markets under the assumption of hourly prices and hourly consumption. I hope the experiences from two small countries can help us forward in understanding OR outside central planning. And finally, I am looking forward to seeing many of you in Christchurch in November, where I will tell you about my other main interest: Why sensitivity analysis fails in answering what-if-questions in light of uncertain parameters. See you in Christchurch!

Stein W. Wallace, Professor of Quantitative Logistics, Molde College, Servicebox 8, NO-6405 Molde, Norway.

Stein.Wallace@hiMolde.no

Letter from the President – Implementing the DSS



Last year, the Centre for Advanced Study (SHS), in Oslo, received a request from a regional library for help in scheduling and routing its bookmobiles. After some preliminary meetings, certain people from SHS felt that they

would like to try to help. The modelling, data gathering, and the implementation of solution techniques were certainly challenging and interesting, but were not the main issue. What seemed more important in the preliminary phase of discussion was how the end users would use what might be produced, in an ongoing manner. The librarian clients are intelligent, hardworking, and have an intimate knowledge of their bookmobile scenario. Yet they have access to only rudimentary computer facilities, and have no knowledge or interest in OR. So the question arose as to why SHS was contacted. What did the librarians seek? What did they hope to have available for ongoing use after the group at SHS was disbanded and no longer available?

Would it be best to work with the librarians to develop heuristics to improve their current pencil and paper approach? However, they were very keen, for political funding reasons, to demonstrate “the best possible schedules”. This meant going to considerable lengths to grapple with data inaccuracy and multiple objectives, in order to make “optimal” schedules meaningful. It was hard to see how the librarians would be able to use the latter approach independently, because of: the inevitable changes in the scenarios that were bound to manifest themselves, and the fact that different questions and objectives were likely to appear, sooner rather than later.

It is one thing to build, say, an optimization model and use it to solve a numerical instance of the clients’ current issues. It is quite another to create an environment in which the clients can manage their own affairs, more effectively than at present, into the foreseeable future. What was decided upon was to develop a variety of heuristic and optimisation approaches. These were to be embedded

eventually in a robust decision support system, taking advantage of modern information technology, that the librarians were likely to be comfortable in using. (I plan to talk on what has been achieved so far, at this year’s ORSNZ conference in Christchurch.)

This question, of what to create for the client’s long run use is, of course, nothing new to most OR practitioners. But its arising with regard to the librarians, gave us at SHS pause for thought. I am raising it here because recent developments in information technology make decision support systems a more attractive possibility, and the practice of OR much more widespread, than ever before. In the past, in order to address complex problems arising in industry, many OR practitioners relied on constructing large-scale models and attempted to solve them using techniques such as mathematical programming (MP). A growing body of opinion questions whether such an approach, on its own, can deal successfully with many of the complex, ill-defined, difficult-to-model issues now facing OR practitioners. This has given rise to other approaches, such as soft systems methodology, to tackle what Ackoff termed today’s “messes.”

MP, on its own, is sometimes saddled with limitations that make it less than ideal for tackling practical industrial scenarios, particularly when addressing complicated problems that have conflicting objectives. Despite its limitations, MP has been, and will continue to be, a valuable part of the OR practitioner’s toolkit. However the power of MP can sometimes be enhanced by incorporating its models and methods within a decision support system, taking advantage of modern information technology.

Compared to MP alone, a decision support system that incorporates MP usually provides greater flexibility, can deal with a far wider range of practical issues, allows for its users’ local knowledge and inspiration, and attempts to enhance the powers of its users, rather than replacing them by outsiders. The models and techniques to be embedded may not necessarily be confined to the classical deterministic OR models such as LP, IP, DP, and NLP. The DSS may also draw insight from such application areas, such as queuing, scheduling, inventory, and others. The models’ bases are included in order to be used, as necessary, to solve certain

sub- issues or precise questions that arise during the overall analysis of the main scenario. They can be invoked to answer “what-if?” questions, to perform sensitivity analysis, and to provide precise solutions to sub-problems that can be modelled exactly. However, it must be stressed that any DSS should be much more than just a mere collection of models and solution techniques. Although this can be quite a valuable aid to the implementation of MP in terms of user friendliness and convenience, it should be only a small part of any DSS. The essence of the DSS is the user-system interface that allows the planners to experiment, input local knowledge and inspiration, deal with unstructured situations, be flexible, and allow for multiple objectives as well as soft (violatable to some degree) constraints.

There is no room for complacency. However, there are certain new opportunities...

Success in global competition requires a new degree of attention to human resources. The reduction of lead times in new product development can provide a competitive edge. Some companies are pushing for “simultaneity,” that is, parallel but coordinated activity, often in different physical locations. At the same time, there is a desire for flatter organizations with fewer managerial layers, and for the replacement, at least in part, of hierarchical organizations by more market-like structures. Many global companies wish to take advantage of their geographical dispersion to tap knowledge and skills throughout the world. Some actually do this by implementing what is known as a trans-national strategy or structure, whereby organizational learning that takes place at one location is captured and exploited at the firm’s other locations.

Where does OR fit in all this? Hopefully, everywhere, but it will not happen automatically. There is no room for complacency. However, there are certain new opportunities that relate only peripherally to early perceptions of industrial management. One of these ideas involves empowering the organizational front line. In the past, OR practitioners have built systems for end-users

largely as extensions of themselves. In other words, they solved the problem and delivered the solution to the potential end users. A different goal is to give people systems with which they can creatively solve their own problems. Western industry, especially the service sector, has recently experienced a widespread push toward empowering people at all levels of industrial organizations. The empowering movement has been accompanied by a pervasive focus on quality and continuous improvement. OR can boost industrial productivity by developing empowering tools for salespeople, factory workers, and others. In particular, if OR can provide them with the means to monitor, understand, and continuously improve their own performance, real gains can follow. These gains are now being accrued in marketing, manufacturing, the services, and financial operations.

What conclusions can we draw for industry? Efficiencies and improved service levels provided by OR in operational systems are essential to the firms using them and cannot sensibly be abandoned. These systems will lead to more efficient operations, marketing, consumer products and, of paramount importance, enhanced customer value. We shall have better integrated manufacturing systems because of multiple levels being tied into computerized information systems. However, if OR is to remain relevant, it must take on new challenges. Another opportunity lies in supporting the goal of simultaneity and time compression. In this regard, it is important to provide tools to assist cooperative work. If we are to shorten lead times, different people will have to work on different aspects of the same problem, at the same time, but in a coordinated way, leading to computer-assisted cooperative work supported by group decision support systems. The complexity of industrial enterprise now requires end-user focussed information systems, often computerized. These are necessary in order for organizations to function efficiently and effectively. The challenges include the assimilation of information systems so that local knowledge can be used easily, support for flat organizations and cooperative work, and the empowerment of front line people, making them semi-independent. These developments are significant for the evolution of OR. If they are embraced effectively, then

OR is likely to have even more impact on economic development and the quality of life.

The issues raised in this letter are elaborated upon in Foulds, L.R., and Thachenkary, C.B., "Empower to the People: How Decision Support Systems and Information Technology can aid the OR Analyst," *OR/MS Today* 28 (3) June 2001.

Les Foulds, Dept. of Management Systems, Univ. of Waikato, lfoulds@waikato.ac.nz, <http://www.mngt.waikato.ac.nz/systems/les/les.htm>

ASOR's Recent Advances In OR Conference/Forum, 13 Nov 2001

This one-day forum was designed to give members the opportunity to exchange ideas and promote growth and activity in the OR community.

Registration 8:30 to 9:00, Conference 9am to 5pm. RMIT – City Campus 360 Swanston St., Building 8 Level 9 Room 66.

All abstracts submitted by November 9 2001 will be published for distribution at the conference. Please submit electronically to p.lochert@sci.monash.edu.au, or by post to Paul Lochert, 11 Laura Gve, Mt Waverley VIC 3149.

The registration fee of A\$50 is to cover the cost of lunch, morning and afternoon tea plus the printing of abstracts and other administrative costs. Retirees and students A\$20.

Meetings Calendar

4-6 Sep 2001, OR43 Annual Conference of UK Operational Research Society, University of Bath, United Kingdom.

22-26 Sep 2001, 45th Annual Meeting of the Australian Mathematical Society, Australian National University, <http://www.maths.anu.edu.au/conferences/AustMS2001>

23-27 Sep 2001, ASOR 16th National Conference, McLaren Vale, Adelaide. Deadline for submission of abstracts 3 July. <http://www.dsto.defence.gov.au/corporate/conferences/asor>

24-27 Sep 2001, Third World Manufacturing Congress, Rochester Institute of Technology, New York, USA. <http://www.icsc.ab.ca/wmc2001.htm>

28 Sep 2001 Abstracts submission deadline, ORSNZ CONF. TWENTY NAUGHT ONE.

18-20 Oct 2001, 17th International Logistics Congress, Greece, <http://www.ilc2001.org>.

23-26 Oct 2001 The First Asia-Pacific Conference on Web Intelligence (WI-2001) and The Second Asia-Pacific Conference on Intelligent Agent Technology (IAT-2001), Maebashi TERRSA, Maebashi City, Japan <http://kis.maebashi-it.ac.jp/wi01/> and <http://kis.maebashi-it.ac.jp/iat01/>

3 Nov 2001 Final papers submission deadline, ORSNZ CONF. TWENTY NAUGHT ONE.

27-28 Nov 2001, 7th Annual Conference of ANZSYS, Australia New Zealand Systems Society, Hotel Rendezvous, Perth, Australia. Abstract submission: July 6 2001. Email: <mailto:whutchison@ecu.edu.au>.

29 Nov - 1 Dec 2001, ORSNZ CONFERENCE TWENTY NAUGHT ONE, University of Canterbury, Christchurch, New Zealand, <http://www.orsnz.org.nz/conf>.

29 Nov-2 Dec 2001, IEEE International Conference on Data Mining, San Jose, California, USA, <http://kais.mines.edu>.

10-13 Dec 2001, MODSIM 2001 Conference, Australian National Univ., Canberra, Australia, <http://cres.anu.edu.au/~tony/modsim2001.htm>

4-6 Jan 2002, International Business and Economy (IB&E) Conference 2002, San Francisco, California, U.S.A. Email Edwin Duerr at the-duerrs@att.net or Yim-Yu Wong at yywong@sfsu.edu.

12-15 Feb 2002, First International Conference on Autonomous Intelligent Systems (ICAIS), Deakin University, Geelong, Australia, <http://www.icsc-naiso.org/conferences/icaais2002>

18-20 Feb 2002, Sixth International Research Conference of Quality, Innovation and Knowledge Management, Sunway Lagoon Hotel, Kuala Lumpur, Malaysia. <http://www.monash.edu.au/occe/qikconference>

2-5 Apr 2002, 31st Annual Meeting of Western Decision Sciences Institute, MGM Grand, Las Vegas, Nevada, USA. Submission deadline 1 Oct 2001. <http://misnt.calpoly.edu/wdsi>

7-10 Jul 2002, 7th International Conference of the UKSS, Systems Research & Practice in the

Knowledge Age, University of York, England.
Abstract submission: 15 Jul 2001. Email:
UKSSConference2002@hotmail.com.

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