



NEWSLETTER

Operational Research Society of New Zealand (Inc.)

Registered at C.P.O., Wellington, as a magazine

NOVEMBER 1987

EDITORIAL

Thanks to everybody who sent in material. As you will see the newsletter is packed out this time.

John Scott from Waikato challenges us about our knowledge of spreadsheets and asks once again where are our OR practitioners in his conference report. Julie Faulkner, Student Paper Prize getter, talks of her trip round the world

Read on.....

Dave Whitaker

ADVERTISEMENT

Vijyalakshmi Devaser is looking for employment in New Zealand in OR. She is currently finishing her PhD in Port Planning. I have a c.v. available for interested parties.

STUDENT PAPER PRIZE 1987

Call for Entries

A suitable paper should be a report of practical or theoretical research or project work as part of studies towards a university degree in 1987. The paper may be of any reasonable length and/or joint authored. Up to 2 prizes annually. Entry forms available from your HOD.

Closing date- 31 Jan 88

Entries to

The Convenor

NZORS Student Paper Prize

Dept T.A.M.

University of Auckland

Private Bag, Auckland

Impressions of 23rd ORSNZ Conference

Our annual conference opened in a fast moving fashion with Jerry Brown describing the Dispatch of Petroleum Tank Trucks over a wide area in the USA. Built around the IBM product IMS - not a satisfactory experience according to Jerry - the system includes customers placing orders with the computer, using the telephone dial as digital input. The work was comforting in that it showed large-scale implementations in a complex, hostile environment are possible with hard work, enthusiasm, a small team, and a genuine interest in understanding the environment. The details are in *Interfaces* 17/1, along with several other outstanding OR applications entered for the TIMS prize.

A fearful John George followed with an interesting application of the transshipment algorithm for controlling the deliberate rounding of published statistics. Not a lowering of the tone at all, John.

So began a varied two-day conference, notable for several reasons.

Firstly, there was the continued move from operational toward more strategic issues experienced in other NZORS conferences. As the hair gets greyer so do the issues. Someone should take a sample of Conference Programmes over the last 20 years and trace the trends - a paper for the 25th Conference?

Secondly, there were not one but *three* student papers with a good standard of both attainment and presentation. The presentation by M.J. Rowe was particularly good. ORSNZ spent \$500 of the conference budget sponsoring student participation with the result that 20% of the participants were students. Money well spent.

The highlight of the conference was certainly Jerry Brown's second address, where he walked the audience through the development of a system for guiding disaster relief. By pausing to ask for audience reaction at several stages, he drew us into the development process. This use of a non-threatening, case study method, particularly by a keynote speaker, is an excellent idea. There is considerable gain across the audience. John Buchanan used a similar technique when he set the scene for a multi-objective, head office, location problem, and then

asked the audience how they would proceed. Unfortunately many speakers don't have that type of courage, particularly if their former teachers are in the audience. However it would not hurt for all application addresses to have a compulsory section: "If I had to do it again ...". Next year's conference theme?

Speaking of papers, one of the negative features was the number of authors who failed to meet the deadline for inclusion in the Proceedings. We should adopt a policy that if reasonable deadlines are not met, a paper will not be accepted.

Overall the conference was a good one. The setting for the dinner - panelled walls and a log fire - helped to convey a feeling of OR in New Zealand being in good heart. Thanks go to the organizers, particularly Rona Bailey who *knitted* the whole affair together.

But where are our members in industry: of the 44 registrations, none were from industry. This is worrying. Where are our members from the oil companies, the manufacturing companies, and the banks for that matter. What should the conference be offering you? If you stayed away, why not jot down your thoughts and send them to the Newsletter.

John Scott

SPREADSHEETS OUTSIDE OR

Close on the heels of David Whitaker's call for more newsletter copy, came the following statement by the editor of *OR Software* - a new feature of EJOR:

... if, as OR specialists we ignore spreadsheets, we are in fact ignoring what represents 85% at least of all modelling in the western world: we are therefore making fools of ourselves.

EJOR 29 (1987) p.111

The stimulus for the comment was the Micro-computers and Decision-making conference in Brussels, where 5 out of the 25 attendees at a software session had not used, even just occasionally, any of the many spreadsheet programs available.

Now one of the feelings I had at the Teachers of OR Conference, in May last year, was that if a similar straw poll had been taken there we would not have fared much better. How many of our OR specialists know:

- o the new features of the latest version of LOTUS 1-2-3.
- o which spreadsheet packages offer Monte Carlo Simulation, Regression or Linear Programming possibilities.
- o the multi-dimensional data base and other features of say VP-Planner.
- o have tried to represent their latest model using a spreadsheet package.

Yet 85% of all modelling business - our business? - is reported to be via spreadsheets.

If one looks at what is being offered by private training groups in New Zealand, then courses in LOTUS 1-2-3 abound. What is being taught is not how to model but how to use a spreadsheet package.

In the same vein, you may have seen the recent Remarkable Computers advertisement, in the Sunday Times, for *What's Best* - the software that offers LP using spreadsheet input. The advertisement included:

What's Best! delivers not just workable solutions, but the best possible solution with just one keystroke ... quantum leap in software capability ... can solve problems that used to require mainframe computers and a team of programmers.

What's Best is the spreadsheet optimization tool that finds the best solution to almost every problem....

The number of applications is almost limitless.

The question is should we be doing anything about all this. It appears there are several avenues possible.

Firstly, we could sit back and wait for the horror stories, and horror stories there will be, as micros and spreadsheets become more powerful and therefor tackle more complex problems in ad-hoc fashion.

Secondly, we could use spreadsheets more ourselves, hopefully showing how it should be done.

Thirdly, we could offer to teach modelling using "spreadsheets" wrapping the hands-on portion with the creative aspects of modelling and the pitfalls of implementation the OR profession has so painfully learnt.

There are of course other possibilities. I wonder what we will do.

John Scott

University of Waikato

LECTURESHIP IN MANAGEMENT SCIENCE

Applications are invited for a Lectureship in the Department of Management at the University of Waikato. The appointee will be required to teach Management Science, mainly at the undergraduate level. Applicants should be able to teach and conduct research in the stochastic models of Operations Research. An ability to teach in the areas of: Management Information Systems, Systems Analysis, or Operations Management will be an additional advantage. Opportunities exist for consulting and also for contributing to post experience courses for practising managers. Applicants are expected to have already completed or to be about to complete a doctorate.

The Department of Management is a multidisciplinary department with an establishment of 36. It is central to a four year undergraduate programme leading to the Bachelor of Management Studies and contributes to a masters programme and the research degrees of M.Phil and D.Phil. The Department also runs a Management Development Programme which offers post experience courses on various aspects of Management to practising managers from both the private and public sectors. An applied research unit, called the Management Development Centre, is attached to the Department. The Department has access to good computing facilities via a VAX network. Micro computers are available to staff. Library holdings in Management Science and related fields are good.

The current salary range for Lecturers is \$NZ32,000 - \$NZ38,500 per annum.

Informal preliminary enquires may be made to Professor B.V. Smith, Chairperson of the Department of Management. 64 (71) 62889 during office hours or 64 (71) 69991 after hours.

Electronic mail address: b.smith@waikato.ac.nz (Internet).

Applications close on 31 January 1988.

N.W. Kingsbury
Registrar

Impressions of a Trip Around the World

Julie Falkner

T.A.M. Department, University of Auckland

Not every New Zealand Ph.D. student gets the opportunity to travel to the other side of the world to attend a conference. I am currently writing a thesis on "Bus Crew Scheduling Using a Set Partitioning Model". I was excited when I discovered, early this year, that the Fourth International Workshop on Computer-Aided Scheduling of Public Transport was to be held in Hamburg in July. Several months of preparation, including writing a paper for the conference, followed and in late July I flew out of Auckland, bound for Germany and a damp European summer. I was invited to visit Universities in England, the United States, and Canada after the Workshop. Unfortunately this meant that I missed the O.R. Society conference in Wellington, but the invitations were too good to refuse.

Just over one hundred participants from seventeen different countries gathered in Hamburg. I was the only New Zealander and thus had the distinction of being the person who had travelled the greatest distance in order to be there. The conference began on Monday evening with a "Get-Together" party and finished on Friday afternoon with a visit to the impressive Hamburg bus and underground control centre. The intervening hours were completely filled with papers, software presentations, and well-organised social activities. It was an exhausting but extremely profitable time. The specific nature of the conference made it particularly rewarding. I had never before had the opportunity to meet other researchers in my field and during the week we had many interesting discussions.

The state of the art in computer-based scheduling was presented at the conference. The papers covered a wide range of topics, including planning shift work for airport handling personnel, scheduling railway motive power, and Dial-A-Bus systems. The mathematical approaches to crew scheduling were particularly interesting. These included column generation techniques, a method based on Lagrangian relaxation, and set partitioning/covering approaches. The three papers given by users of bus crew scheduling systems were also a highlight, as they presented the difficulties and the achievements from a different perspective. My own paper, on the work which I have been doing for the Christchurch Transport Board, was well-received.

The Universities which I visited on my way back to New Zealand included the University of Leeds in England, the University of Maryland in the United States, and the Université de Montréal in Canada. These are the three main centres of research into bus and crew scheduling and the visits were definitely worthwhile. I presented seminars at Leeds and Maryland. I also visited Stanford University, where there are researchers who share my interests in linear optimisation and in particular the problems which can be caused by degeneracy in the simplex method. I renewed my acquaintance with Professor Michael Saunders, and had a thought-provoking discussion with Professor George Dantzig.

My trip overseas was most stimulating and I am pleased that I was able to take advantage of a wonderful opportunity. I am very grateful to the Auckland branch of O.R.S.N.Z., the Royal Society of New Zealand, and several other organisations, for the financial assistance which I received, and to my supervisor, Dr David Ryan, for his enthusiastic support.

OR Is Not Mathematics

- Mathematical techniques constitute a very small part of the OR activity, hence it is essential for OR workers to have a wider base of knowledge and understanding of the industrial context in which they undertake project work.
- OR projects involve far less analysis than synthesis.
- There is usually a greater payoff from changing constraints and designing new systems than improving existing systems with mathematical models that accept existing constraints.
- OR work should be largely problem oriented and not technique oriented.
- Primarily, OR analysts are not puzzle solvers.
- A successful OR project is not characterized by an elegant solution to a problem, but by an implementation of change that results in a positive payoff to the system for which the study has been undertaken.
- Optimization as an objective is rarely appropriate or even valid in the total OR process.

JOURNALS FOR SALE

Asia-Pacific Journal of Operational Research, Vol 3 No 2, Nov 1986
Proceedings of 23rd Annual ORSNZ Conference, August 1987
APJOR Vol 3 No 1 (May 1986) for sale

Please send cheques (payable to ORSNZ) to:

Miss R. N. Bailey
DSIR Applied Mathematics Division
P. O. Box 1335
Wellington ph 727-855

IAOR
A Reminder

Anybody who intends to subscribe to the 1988 issues of "International Abstracts in Operations Research", (6 issues, Vols 36 & 37) must have their payment of \$65 to:

The Treasurer
ORSNZ
P O Box 984
Wellington

by 30 November.

NEW MEMBERS

We extend a warm welcome to ASB Trust Bank who have joined as corporate sponsors.

Also, welcome to

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