NEWSLETTER

_____

Operational Research Society of New Zealand (Inc.), PO Box 6544, Wellesley St. Auckland, New Zealand
http://www/asc/auckland.ac.nz/Organisations/ORSNZ/

EDITORIAL

In a recent issue of the New Zealand Herald there was an article in the Information Technology section entitled "Space scientists write model". The subject of the article was constraint-oriented reasoning (Cor) technology, developed by "the best mathematical minds in the world in the area of simulation and optimisation…, sequestered in the top-secret science towns developed by the former Soviet regime". According to the article these scientists had been tracked down by a University of Massachusetts professor to develop and program the software engines required to solve some of the optimisation problems arising in enterprise management systems. This "rocket science" is now available in the Cor software product marketed in a number of countries including New Zealand.

Cor is an example of supply chain management software which either bolts onto or forms part of an enterprise resource planning system (ERP). ERP software endeavours to integrate all the basic processes of a business (such as taking orders, monitoring inventory, and financial accounting) into a single computer system. Over the last decade enterprise resource planning has become a huge billion dollar industry, with companies such as SAP, Oracle, and PeopleSoft leading the market. Most of the large companies in the United States have begun implementing or are planning to implement these systems in the next few years.

_____

Contents

_____

A MERRY CHRISTMAS AND HAPPY NEW YEAR TO YOU ALL FROM THE EDITORIAL TEAM

What relevance does this trend have for OR/MS in New Zealand? First it must be recognised that industry acceptance of supply chain management software is a huge success for OR/MS. Mathematical programming models of a complete enterprise, from the procurement of raw materials to the final markets, are the only tools able to deal adequately with the complex interactions between many different product lines and processes. Five years ago Harvey Wagner wrote in Interfaces "…industry continues to struggle with materials requirement planning…a stern gatekeeper that guards the plant floor from incursions by operations research…", and continued to say "…the only tested integrative approach to crossfunctional management is the application of corporate linear programming models." Now linear programming and indeed mixed integer programming codes have become robust and fast enough that they have become a common tool employed by supply-chain optimisation software (a browse of the Cor web site reveals that branch-and-bound is one of the main techniques used) and logistics managers are becoming aware of their power.

One wonders what effect a proliferation of supply chain management software will have on the OR/MS profession. I am sure that any OR/MS practitioner working as a consultant in a New Zealand industry with a supply chain focus might be concerned by an inability to compete with a complete solution offered by a company such as SAP. There are clear advantages of standardisation gained by acquiring a complete ERP system implemented by a world leader, as compared with a non-standard homegrown application, even though this may be based on a better model with local knowledge. Standardisation improves the likelihood of continued support, and access to future technology upgrades.

So will ERP become a new gatekeeper? At first sight the future does not look promising. It is often suggested that supply chain management software provides an enormous opportunity for OR/MS practitioners to provide bolt-on engines for optimising particular aspects of the supply chain. This is true for those of us who write generic mathematical programming software, or optimisers tailored to a specific industry function, although the same benefits of standardisation apply: a home grown linear optimiser is unlikely to be significantly better than a standard product like Cplex, so it is difficult to justify the adoption of the former as a bolt on. Furthermore most OR/MS activity is not of this type – many of us use models (and software) to gain insights to decision problems, where the models are totally specific to the client, and not a generic bolt-on. So, in manufacturing industry at least, ERP threatens to replace a major part of traditional OR/MS activity.

However the future for traditional OR/MS in the face of ERP is not entirely depressing. Many companies in New Zealand are too small to afford an ERP installation, and remain perfect candidates for traditional OR/MS. On the other hand ERP provides a tremendous opportunity for OR/MS practitioners in large companies to have all the information of the company at their fingertips. The opportunity also exists to provide advice to companies contemplating a supply-chain optimisation exercise, for as OR/MS experts we are the natural group to articulate to companies how to implement the approach. It is important that the process and technologies be understood and accepted by the organisation, and that they participate in its implementation. Any company uncritically accepting a large mixed integer programming model, even if sold as rocket-science technology, does so at its peril. If possible, installation of supply-chain optimisation should be done gradually, building understanding and acceptance in the organisation by starting small, but thinking big. To do this properly (for example by using pilot models in scaleable environments like AMPL or GAMS) requires training and experience in OR/MS.

Finally, is ERP just another management fad which will be replaced by some new approach (and acronym)? Morgan Stanley estimate that 15-20% of current sales of ERP systems are to companies rushing to solve the Y2K problem, and so we might expect some decline in interest in ERP after 2000. More importantly, like many generic software products, existing supply-chain management models have limitations. For example, to the best of my knowledge no supply-chain optimisation software has the ability to construct optimally hedged plans in the face of uncertainty in supply, demand or price. This must be an important consideration for manufacturers, but constructing such a stochastic optimisation model is not an automatic exercise, and it requires considerable modelling expertise. However these are not major impediments. The principles (of standardisation and system optimisation) which underly ERP are compelling, and although the acronym might change, the approach will survive. The key to our continued prosperity as OR/MS practitioners is to be in a position with users of OR/MS in New Zealand manufacturing industry to participate in their particular implementation of ERP. In particular we must advise them to not choose slick software over good modelling, to help them understand that much of the mathematics is not rocket science, and leaven the North American sales pitch with strong doses of empirical scepticism.

ANDY PHILPOTT, President, ORSNZ

MINUTES OF THE THIRTY-FOURTH ANNUAL GENERAL MEETING

Date: Monday 31 August 1998
Time: 4:47 pm to 6:47pm
Venue: Room 3.407, School of Engineering, University of Auckland

Present: Andrew Philpott (President), Andrew Mason (Treasurer), Diane Bischak (Secretary), Tiru Arthanari, Hugh Barr, John Buchanan, Bob Cavana, Shane Dye, Gary Eng, Les Foulds, John George, Geoffrey Gill, Andrew Goldie, Shane Henderson, Vicky Mabin, John Paynter, Nicola Petty, John Raffensperger, Grant Read, Catherine Rivers, Paul Rouse, David Ryan, Chris Wallace.

1.0   APOLOGIES

Apologies were received from H. Daellenbach and J. Davies.

MINUTES OF PREVIOUS AGM

Accepted as true and correct.

PRESIDENT'S REPORT

See Appendix 1.

Correction from meeting: John Davies is not one of the editors of the Newsletter.

TREASURER'S FINANCIAL STATEMENT

4.1   An amount of $282.10 has been transferred to the society's main accounts from an old account at ASB.
4.2   Over $1000 in subscription fees has been paid to the Royal Society of New Zealand, including fees totalling about $700 for past years that the society hadn't previously been billed for.
       Since there was no ORSNZ conference this year, the Society did not benefit from the income this normally generates. However, travel grants totalling $500 were paid to students travelling to the APORS conference in Australia; this amount was less than expected because of late withdrawals of students from the conference.
       The visitor program is especially active, with $1000 having been spent to support two visitors.

5.0   MATTERS ARISING FROM THE FINANCIAL STATEMENT

Bob Cavana noted that the Society withdrew from the Royal Society of New Zealand some time ago because of dissatisfaction and inquired whether the payment listed in the financial statement covered the entire period since that time. Andrew Mason stated that the payment did not cover that period; the Society agreed to rejoin the RSNZ three or four years ago. Andy Philpott stated that the RSNZ had contacted him, and he desired the connection with them because of their involvement with the Mathematics in NZ project; the decision to rejoin can be revisited.

Hugh Barr mentioned that all members of the Society are now listed on the RSNZ web site of scientists in NZ, which is good publicity for the Society.

John George noted that the $1400 in APJOR purchases looks odd, but the amount covers more than one financial year, a consequence of where the purchase happens to fall in the financial year.

6.0   ELECTION OF OFFICERS

Nominations for Society officers were opened. Andy noted that present Society policy is that all the officers should be located at the same site. Bob Cavana argued in favour of allowing the vice-president to be located at a site different from that of the other officers.

6.1   Nominations for Society officers were opened. Andy noted that present Society policy is that all the officers should be located at the same site. Bob Cavana argued in favour of allowing the vice-president to be located at a site different from that of the other officers.

6.2 Nominations for Society officers were as follows:
President: Andy Philpott (nominated by L. Foulds / seconded by J. George) – accepted.
Vice-President: Bob Cavana (A. Mason) – declined.
Vice-President: John George (G. Read / H. Barr) – accepted.
Secretary: Diane Bischak (A. Philpott / S. Henderson) – accepted.
Treasurer: Andrew Mason (A. Philpott) – declined due to being on sabbatical next year.
Treasurer: Shane Henderson (A. Mason / J. George) – accepted.
Council: Tiru Arthanari (membership) (A. Mason / A. Philpott) – accepted.
Council: John Buchanan (L. Foulds / H. Barr) – accepted.
Council: Les Foulds (J. Buchanan / J. George) – accepted.
Council: Vicky Mabin (J. Buchanan / B. Cavana) – accepted.
Council: Grant Read (A. Philpott / J. George) – accepted.
Council: Michelle Baron (V. Mabin / B. Cavana) – accepted (in absentia).
Council: Andrew Mason (B. Cavana / S. Henderson) – accepted.
Council: David Ryan (G. Read) – declined.
Council: John Raffensperger – declined.
Council: Catherine Rivers (B. Cavana / J. Buchanan) – accepted.

6.3 All accepted nominations were approved by voice vote.

7.0 SUBSCRIPTION RATES

Current subscription rates are $50 per year, the same as last year.
Hugh Barr asked who the corporate members are. Andrew listed ILOG, Air NZ, CORE, and the NZ Refining Company.
Grant Read asked why the membership fees could not be reduced, especially those for the students. Andrew felt that commitment is gained from students this way; if the membership fees were reduced, the Society would lose student members.
Bob Cavana suggested that students receive two years' membership for free immediately after graduation. Andrew said this would mean lots of hassle and extra mailing costs trying to locate students who have moved.
Les Foulds moved to maintain the status quo on fees (seconded A. Mason). The motion carried on a voice vote.

8.0 1999 CONFERENCE

Bob Cavana led a discussion concerning the possibility of combining the 1999 conference with the 17th International Conference of the System Dynamics Society and the 5th Australian New Zealand Systems Conference, to be held at Victoria University of Wellington (VUW) on 20-23 July 1999.
Andy Philpott indicated that there had already been extensive discussion by council members on email over the issue but no agreement had been reached. Some concern was voiced about the $600 charge for non-students.
Bob Cavana suggested that the Society could be a co-sponsor, with a cost around $2000. This might reduce the $600 charge.
Other comments included: possibility of a joint conference with all ORSNZ sessions on one day; could have a daily rate, with or without the ORSNZ sessions spread across days; ORSNZ should do its own proceedings in any case; there exist previous precedents for combining with another organisation, such as with a maths or stats conference.
Five options were considered: (1) ORSNZ as an appendage at low cost, with a one-day rate for ORSNZ members; (2) November/December conference at VUW; (3) August conference at Waikato; (4) November/December conference at Waikato; (5) no conference in 1999.
Shane Henderson proposed a motion (seconded by J. George) that the ORSNZ Council seek Waikato's view by September 14th on holding an ORSNZ conference late in 1999. Council will then decide what form the next conference should take. ORSNZ is to support and welcome the Systems Thinking conference with a view to having ORSNZ members attend at a one-day rate. The motion passed on a voice vote.

9.0 OTHER BUSINESS

9.1 Andrew brought up a constitutional issue of accepting resolutions by email.

9.2 Discussion ensued concerning various problems with correspondence by email. Points raised included: the question of a quorum for electronic "meetings," the possibility of telephone conferencing, the fact that it is difficult to get the whole council together physically for a vote, the idea that discussion should strictly precede a vote, and the fact that email votes can't be verified and aren't necessarily secure.

9.3 Grant Read noted that a person is not required to reply to an email, and silence may mean consent or that no one has read the email; a more formal response may be needed.

9.4 John Raffensperger moved that proxy votes by council members may be submitted electronically (seconded L. Foulds). The motion carried on a voice vote.

APPENDIX 1: ORSNZ PRESIDENT'S REPORT 1998

MEMBERSHIP
The current membership (at the time of writing) of the ORSNZ is as follows:

	THIS YEAR		LAST YEAR	
	Paid Up	Yet to Pay	Paid Up	Yet to Pay
Corporate Members	6	2	4	
Number of People	8		10	
Fulltime Members	75	27	85	41
Overseas Members	9	4	7	4
Retired Members	5		2	
Student Members	16	7	18	4
Total People	119	40	123	49

FINANCES
The finances of the ORSNZ are in a healthy state. The Society made a net income of $947.88 in 1997/98.

ORSNZ CONFERENCE
The conference in 1997 was held in conjunction with the APORS 97 Conference in Melbourne. The APORS Conference was very well run and proved to be a highlight of the year for ORSNZ members who attended. We are indebted to Vicky Mabin for her role in making this such a successful event. The ORSNZ Conference for 1998 is in Auckland. The provisional sequence for the next ORSNZ Conferences is as shown.

1999 Victoria/Massey
2000 Waikato
2001 Canterbury
2002 Auckland
2003 Victoria/Massey

VISITORS
There have been a number of OR/MS visitors to University Departments in New Zealand. In 1997 ORSNZ supported the visit of John Ranyard of Lancaster University as the 1997 ORSNZ Visiting Lecturer.

Professor Ed Silver was the 1998 ORSNZ Visiting Lecturer.

ORSNZ NEWSLETTER
Along with the annual conference, the Society's Newsletter is a key service provided by ORSNZ to its members. In 1997/98 the role of Editor was taken over by a new team of people based in Wellington. They are John George, Bob Cavana, Vicky Mabin, and John Davies. This team is ably supported by Tricia Lapham, who administers the production of the newsletter.

(1) The ORSNZ Newsletter is published quarterly, on September 1, December 1, March 1, and June 1. Copy for each issue must be in the hands of the editor by the 15th day of the month preceding publication.

(2) The Newsletter contains a regular 'Branch News' section. Each branch and institution will be required to nominate a correspondent to write a gossip column for their branch.

(3) ORSNZ Members at academic institutions are encouraged to submit for publication in the Newsletter all descriptions and timetables for final year projects, Masters projects, and PhD projects, so that we can read about research being carried out by young practitioners in these institutions.

COUNCIL

In January the Society bid farewell to the Acting Secretary of the Society, Megan Thornley, of the Commerce Faculty, University of Auckland, who left Auckland to pursue her career in London. The new acting secretary is Dr Diane Bischak of the department of MSIS, University of Auckland.

Since the last AGM, there has been one Council meeting, in January 1998, the decisions of which have been summarised in the most recent Newsletter edition.

WEB NEWS

The home page for the ORSNZ has URL
http://www.esc.auckland.ac.nz/Organisations/ORSNZ/
New services which have been added to this page this year are
(1) home pages of ORSNZ members,
(2) links to other OR /MS sites;
(3) link to Royal Society of New Zealand;
(4) Conference information including full versions of submitted papers.

REVIEW OF MATHEMATICAL SCIENCES

The Ministry of Research Science and Technology has recently released a report from the standing committee on Mathematics of the Royal Society of New Zealand. This review has been compiled by Professor Jeffrey Hunter and Professor David Vere-Jones, and is intended to comment on the state of the mathematical sciences in New Zealand, while at the same time identifying directions for its future. There has been widespread consultation, in particular with members of the ORSNZ Council. The final report can be read in full on the web site at http://www.mcs.vuw.ac.nz/~edith/front.html

A summary of the report is included in the most recent ORSNZ Newsletter.

FUTURE DIRECTIONS FOR ORSNZ

The ORSNZ is in a state of flux. The role of the Canterbury University contingent in the Society has declined. There are new opportunities and challenges ahead of us, both as individual OR/MS experts, and as a Society. One of the main dangers facing us is a convergence (from above!) towards a critical mass, as more senior members retire or resign, not to be replaced by younger prospects. As the society declines in membership, we face the possibility of amalgamation with ASOR (the Australian Society), a much more vibrant and energetic group. Certainly there are economies of scale that such an amalgamation would present. Perhaps we should seek a bi-annual trans-Tasman conference rather than the annual meeting we currently enjoy?

COUNCIL NEWS

At the last AGM in September a new Council to the ORSNZ was elected. Council officers are as below.

President: Andy Philpott   Secretary: Diane Bischak
Vice-President: John George   Treasurer: Shane Henderson

Council: Tiru Arthanari (membership), Michelle Baron, John Buchanan, Les Foulds, Vicky Mabin, Andrew Mason, Grant Read, Catherine Rivers

The first meeting of the Council is to be held on December 16th. At this meeting we expect to ratify the decision to hold the 1999 ORSNZ Conference at Waikato University in December. We are grateful to John Buchanan and Jim Corner and their department for agreeing to host the conference. We are also calling for nominations for the 1999 ORSNZ Visiting Lecturer. Details of this are given elsewhere in the Newsletter.

ANDREW PHILPOTT, President

"THE NEW ZEALAND ECONOMY – WHAT WE HAVE LEARNT, FORGOTTEN AND REDISCOVERED"

A speech to commemorate the 40th anniversary of Business and Economic Research Ltd (BERL)

Emeritus Professor BRYAN PHILPOTT

THE BEGINNINGS – BERL FORECASTS

BERL was founded forty years ago by three people: Hew Walls who was a staffer in the Reserve Bank; Norman Macbeth, Editor of the Christchurch Press and sadly no longer with us; and Bryan Philpott, then an economist with the Meat and Wool Boards' Economic Service.

In its early formative years BERL was a loose fairly informal group, meeting once a quarter to produce a quarterly forecast of the economy.

Why did we do it? Partly because most opinion was that it couldn't be done, especially in a very open economy like New Zealand. But more than this, we were all recent post-war graduates in Economics. We were well versed in all the theoretical niceties of the market price mechanism (long before these were revealed to the Business Round Table). We understood its great theoretical virtues but equally its manifold problems in the real world. Looking back, I realise we felt that, no less in Economics than in other aspects of life, we needed to try and forecast where we were heading, whether the direction was satisfactory, and if not, to consider that to do about it. In later years this came to be known as "indicative economic planning," and, in essence, represents a view standing in direct contrast to the notion of leaving everything to the ultimate benevolence of the market.

In the early years, the forecasting team would assemble once a quarter at the home of one of the members and work for a whole weekend from Friday nights to Sunday night to produce the early forecasts, which were gestetnered broadsheets distributed free to companies, people, and institutions to demonstrate the service. The second issue in 1958 successfully forecasted the famous Nordmeyer "Black Budget" and BERL's reputation was immediately established, a fee of 15 guineas per annum was levied, and subscriptions grew rapidly.

To the three founding members other economists joined from time to time – it would take too long to list them here – but essentially in these first few years the entity consisted of a number of enthusiastic part-timers enjoying the excitement of pioneering a new professional forecasting service.

The methodology required hard work beforehand and substantial concentration over the weekend, and was only sustainable by the high quality provisioning provided by spouses for whom no praise is too high. BERL wives, once a quarter, found their homes turned into motels invaded by a crowd of fractious argumentative economists. The supplies of food and drink required to sustain the arduous intellectual labours were very substantial.

CONSULTANCY

By the end of the 60's the economic forecasting routines were developed and operating successfully as they do until this day. Attention then turned to developing the consulting business by the appointment of full time economists, two of whom, Paul Frater and Kel Sanderson, are still in BERL as senior directors.

In the thirty years of consulting work an enormous number of assignments and research projects were carried out, including overseas projects in Malaysia, Thailand, Belize, and East Africa. In the later years

many of the domestically oriented jobs made use of economy wide (or general equilibrium) models – used by way of example to evaluate the economy wide impact of import tariff reform, manufacturing exports, tourism development, GST, transaction taxes etc.

BERL staff themselves were closely associated with the general equilibrium modelling work of the NZ Planning Council, with whose role in the economy BERL was in agreement, and whose work BERL carried on when the Planning Council was aborted by Government in the mid 90's.

The development of economic consultancy in the 70's was not an easy task, partly due to the inability of local businessmen to appreciate the benefits which could accrue to soundly based economic analysis of business problems, prospects and policies. But it is also due to BERL's insistence that projects undertaken should involve the use of the very latest up to date methodology with heavy emphasis on econometric models. Such techniques were little understood or appreciated outside the narrow band of academics and econometricians making up the BERL group.

In due course, this changed, in line with the marked increase in the number of economics graduates employed in senior positions in business and government, and selling consultancy work became much easier.

MISSION STATEMENT

It is fashionable nowadays for firms and institutions to have a mission statement, though, like fashions, what purpose this serves I've never been able to understand.

BERL never had a mission statement but, looking back in the light of some of the earlier BERL papers, I'm fairly sure that such a statement, had there been one, would have stressed a number of things.

It would of course have assured clients that BERL aimed only to do work of the highest quality and embodying the latest best practice methodology. But it would have gone further, and especially in connection with overall business and economic policy, it would have stressed:

The need for the analysis of all significant changes to include the effects at the economy wide level.
Support for low (but not necessarily zero) tariff protection and a role for efficient import substitution industries.
Stress on the critical, and all pervading, importance of uncertainty as to the future, and of the need to relieve this (as far as possible) by good economi8c forecasting and economic planning as a substitute for, or a complement to, sole reliance on the marked to solve problems related to the future.
Concern at the destabilising effect of possible malign speculation in, and movement of, mobile international capital.
Tolerance (where necessary and when optimally designed) of government intervention, regulation and control, including the control exercised by the proper integration of monetary and fiscal policy.

BUSINESS ECONOMISTS

In the light of these possible ingredients in a "virtual" mission statement, BERL has on many occasions come into conflict wit prevailing mainstream views and conventional economic wisdom.

Thus, as an example, for a number of years now BERL has been publicly critical of the goals and conduct of monetary policy, of the lack of integration of monetary and fiscal policy, and above all the need to lower the exchange rate in the interests of sustainable growth and manageable overseas deficits – along the lines of successful exchange rate policy in Australia.

BERL's arguments were continuously opposed. The exchange rate, it was said by critics, is not something to be tinkered with, as compared with getting the fundamentals right.

The high exchange rate we've run for the last four years or so, has (as BERL predicted it would) led to marked decline in tradable goods production (compared with non tradable sectors). This has contributed to an exploding overseas deficit financed by overseas deficit financed by overseas borrowing (which is cosmetically labelled overseas investment) and to spiraling overseas debt.

Now in 1998 with no conscious effort by anyone, the exchange rate has fallen considerably and suddenly we have a switch in the conventional wisdom such that this is now regarded as a good thing and portends an eventual recovery. This is possible true provided everything is done to keep the exchange rate down (which is unlikely), but the lags in the system are very long and many producers must be so mightlily discouraged as to have given up or moved overseas. The whole episode will have cost an enormous amount of potential output which has been lost forever.

I could replicate examples of this sort, including in recent years BERL's opposition to the income tax cuts, especially in view of the mass of bad research and misinformation surrounding that topic. Burt, I won't go further other than to say that I wonder whether sometimes BERL feels an almost subconscious necessity to stand out against the conventional wisdom and so called mainstream economics. Either because of the inadequacy (or even absence) of research in which it is based, or even from an instinctive mistrust.

THE ECONOMY

I can't help feeling that, in light of New Zealand's experience in the last two years, there is occurring a number of seas changes in attitudes to some of the ingredients I included in the BERL mission statement, and which a year or so ago were excoriated by the pundits.

Let me mention just a few:

There is now greater recognition of the problem of uncertainty (in spite of attempts to meet the problem by abolishing it under the guise of rational expectations).
Consequently there is renewed interest, even by Government, in long term forecasting and planning as evidenced by the Foresight Project.
There is now some grudging acceptance of the relevance and importance of aspects of Keynesian economics.
There is now recognition of the major international (and domestic) instavility introduced by mobile foreign capital and overseas investment.
It is now realised that more attention must be devoted to economy wide effects of free marked policies.
And lastly, dare I say it, we even now have Ministers of the Crown supporting the notion of regulatory control and even price control.

Many of these revisionary views stem from the results of the major, and in many respects unfortunate, economic experiment we've been involved with over the last decade or so. Some aspects of this experiment can certainly be supported but much of it has contributed to the economic and social waste land we now inhabit. For let us be quite clear that our present economic problems are not of themselves due to the Asian crisis though that of course hasn't helped. The seeds of our present malaise were sown (policy wise) long before the onset of the Asian crisis and the results, as we now see them, were indeed forecasted.

I personally hope we're at the end of this particular experiment. But from the Business Round Table Knights (or as Conrad Blyth once described them, the Ayotollahs) we are constantly being urged to press on with the experiment to the bitter end. The Ayotollahs seem completely unaware of the particular and peculiar characteristics of this small, remote and exposed economy and the extreme economic fragility which results.

BERL AT 40

BERL is now 40, an age that can imply maturity and experience, or which can alternatively presage mid life crises in relationships, in employment etc.

Happily for BERL there are no signs of a mid life crisis. Indeed, the firm continues to hire more bright young well trained economists and econometricians who are fully extended meeting client demands. The tradition experience and maturity implied by 40 years of work will be invaluable assets in successfully7 handling the further changes in attitude and further challenges which face New Zealand in the next forty years.

It's quite sure that, in this future, BERL will operate with the same invaluable collegiate spirit of enthusiasm and intellectual camaraderie which characterised its foundation 40 years ago and continues to do so today.

Finally let me personally than k all the colleagues with whom I've worked – both those in "BERL present" and well as "BERL past".

I have always thought, as an Economic Professor, that there was no greater benefit when teaching economics, than being involved in the real world of business – as a complement, and in some cases an antidote, to the world of the theoretical textbook. I'm very grateful for the decades of experience of this sort that I have had.

Brian Philpott has had a distinguished career firstly as a Economist for the NZ Meat and Wool Boards Economics Service (from its inception in 1953) and then as an academic at the then Lincoln College, Cambridge and Victoria University of Wellington, where he is presently Emeritus Professor of the Research Project of Economic Planning. His contribution has included innumerable published research papers, and equally importantly, teaching many of the leading members of today's economic profession.

Bryan, a founding Director of BERL, retired from that position at the end of 1997. However, his forty year contribution to the company's work continues, with involvement in consultancy projects and as a member of the BERL Forecasts panel, where his incisiveness and knowledge of the New Zealand economy frequently outstrips that of his more junior colleagues.

ORSNZ VISITING LECTURER AWARD

The Council of The Operational Research Society is calling for applications for the 1999 ORSNZ Visiting Lecturer Award. The award of $500 is intended to assist the travel within New Zealand of internationally recognized OR/MS academics and practitioners who are visiting this country. In special circumstances the Fund might be used to support a visit from Australia. The award is intended to encourage the interaction of the visitor with all of the regional branches of the Society, and it will be expected that the visitor give lectures at each of these branches. The Council makes up to two of these awards each year.

To apply for such a grant, the host of the visitor in New Zealand should apply in writing to: Dr Diane Bischak, Secretary, ORSNZ, Department of Management Science and Information Systems, University of Auckland, Private Bag 92019, Auckland enclosing a curriculum vitae for the visitor and a proposed itinerary. Applications close at the end of January and at the end of June, for visits occurring in the next twelve months.

ORSNZ '99 – WAIKATO UNIVERSITY, HAMILTON, NEW ZEALAND

FRIDAY 10th and SATURDAY 11th DECEMBER 1999

Next year's conference features:

A dovetail with the MODSIM (Modelling in Simulation) conference which ends on the Thursday.

In response to feedback from busy people, we feature the "work-end" concept, to conference Friday and Saturday and get away for the rest of the weekend. Why not plan to bring someone and get away for a pre-Christmas break? Hamilton is in easy reach of many sights, sounds and sensations.

Please direct any queries to:
John Scott, Department of Management Systems, University of Waikato, Private Bag 3105, Hamilton, New Zealand, e mail: jls@waikato.ac.nz

ILOG CPLEX

ILOG/CPLEX has just announced a new product release called Planner 3. ILOG Planner is a C++ library for solving LP and MIP problems. It is unique in that it allows easy integration with ILOG Solver, Constraint Programming engine. In fact, the MIP branch-and-bound search can be totally controlled by Solver, allowing easy use of problem specific knowledge and heuristics within the search.

Planner 3 is different to earlier release of Planner because it gives you almost complete access to the successful CPLEX algorithms as well as the Constraint Programming featurese. Planner 3 uses the idea of 'object' to make writing applications simpler and easier. You don't need to think of the matrix structure at all any more – simply declare the variables, write the constraints and ask Planner 3 to solve the problem. Existing CPLEX callable library customers can upgrade to Planner 3 for a small charge. Please contact Lih Shiew at guo@ilog.com.sg for further information.

Comparing Planner 3 code with CPLEX code:
Example: Steel Production

Planner variables and Objective

```
.IlcFloatVar make[NumProd][Tweeks];




for (t = 0; t < Tweeks; t++) {
    make[p][t] = IlcFloatVar(m, 0, IlcInfinity);
    obj = obj – ProdCost[p] * make[p][t];
  }
}
```

CPLEX requires variable mapping

```
T=4 (weeks (t=0,1,2,3), P=2 products (p=0,1)
Variables: Make[p][t]
Make[0][0]=0, Make[0][1]=1, Make[0][2]=2, Make[0][3]=3,
Make[1][0]=4, Make[1][1]=5, Make[1][2]=6, Make[1][3]=7
```

Planner constraints

```
for (t=0; t < Tweeks, t++) {
   IlcFloatExp row = zero;
   for (p = 0; p < NumProd; p++)
     row = row + 1.0 / Rate[p] * make[p][t];
     lo.add(row <= Avail[t]);
}
```

To solve

```
IlcSolutionStatus solStatus = lo.primalOpt();
```

Getting the answer

```
For (p=0; p < NumProd; p++)
   m.out << "\t" << ProdNames[p} << "="
        << lo,getCurrentValue(make[p][t]) << " ";
```

For more information, contact Dr. GUO Lih Shiew, email: guo@ilog.com.sg, phone: (65) 773 0626
 http://www.cplex.com   http://www.ilog.com.sg
ILOG and CPLEX are registered trademarks of ILOG
for (p=0; p < NumProd; P++) {

Dr. Lih Shiew, GUO, ILOG CPLEX

INTERESTING QUESTIONS

Hans Daellenbach, in the last issue, reminisced on C. West Churchman and made the case for being ever alert to the fringe benefits when doing OR projects, as these can lead to the greatest pay-off. He also added:
……. an operations researcher's curious mind asks the right questions. One of the basic rules for any operations researcher must be to always ask "Why?" and follow up the answer with another "Why?" - not giving up until a satisfactory explanation or reason for a given fact has been obtained.
I agree with the intention but not the delivery: "Why?" has Hans's endearing directness, but can get right up the nose of a seasoned supervisor, particularly if delivered by a fresh-faced, young analyst
. Now Hans may not have meant "Why?" literally, but it raises the interesting question of what makes for a "good (or interesting) question"?

Good practitioners ask good (appropriate, well-worded, insightful, timely) questions. We reply "Good question!" when we can see the power but do not have an immediate response. Good questions are a bit like good quality - we know it when we see it
.
Do our OR students ever study questions? Just being able to classify questions (e.g., into open and closed questions, comparisons, reflective probes) helps raise student awareness. Knowing (discussing) when to use the different types and where this may lead, is the next stage. Occasionally analyzing the form (as well as substance) of questions as they naturally arise throughout a course reinforces. None of this takes much time.

As an example, one of our courses requires students to make their own notes from a text, but also to come up with one Interesting Question (IQ) - one that leads out from the material or explores interrelationships, in contrast to a question of clarification or understanding. Both can be discussed in class, but what rich items student generated IQ's can be. If a satisfactory answer does not emerge, then the process of how to find out can emerge. This is not typically followed through but research skills are being stimulated in a natural, relevant (to the student) way. To emphasize the importance, a test question asking for an IQ and a sketch answer sometimes appears. Marks are given both for the insight shown by the question (degree of systemic difficulty if you like) and the sketched out answer, or execution. It wasn't in this year's test - one doesn't want to get too predictable - and a student berated me, with a smile, saying he had just the question! Responses vary as you would expect. Those that keep such issues at the end of a 40 foot barge pole will typically take such a test question and try a back-fit: complete, specific answer to, leading back to a narrow, closed question. Easily spotted and since backward chaining is part of the course, a useful, memorable metaphor. It gets a few laughs as well.

Raising IQ's (sic) can do just that for any course, be it theory based or applied. As Jacob Bronowski said in that beautiful book The Ascent of Man (pg 122):
Einstein was a man who could ask immensely simple questions. And what his life showed, and his work, is that when the answers are simple too, then you hear God thinking
For us lesser mortals, reaching that state takes a little practice.

JOHN SCOTT, University of Waikato

From memory, it was also Churchman who first gave us the useful dictum that "Implementation is the first (rather than last) stage" of a project, referring to the need to quickly establish good analyst/client respect and repoire if implementation of results is to occur.
 Pirsig's "Zen and the Art of Motorcycle Maintenance" has some interesting observations on this theme. Should be on the reading list for any serious quality course (e.g. pg. 208-213)

OF WEEDS AND CLOUDS

John George's editorial (September issue, ORSNZ Newsletter) included a plea for help in resolving a dilemma that I see no one has responded to. His story struck a chord with me, not only because I have battled with onion weed often, but also because I encounter dilemmas all the time.

As you may recall, his dilemma concerned the onion weed he has found all over his new property in Wellington, which I paraphrase as: I would like an attractive garden, but it's full of onion weed. Do I dig and risk erosion, (ie the whole bank is likely to slip into my back yard!) or do I put up with it? Dig or not dig? That is the question!

Now John's dilemma is quite simple to resolve, and I'm sure all you able gardeners have plenty of tips for John (which you've no doubt conveyed privately since none of you have done it via this venerable medium). However, it does provide a classic example of a dilemma which can be tackled using one of Eli Goldratt's tools, the Evaporating Cloud (also referred to by other authors as a conflict cloud, or Conflict Resolution Diagram). This method provides a structured and non-threatening way of asking "Why?" till you get to the bottom of the problem (as advocated by Hans Daellenbach in the same September issue prompting a rejoinder by John Scott in this present issue). It can be used for any conflict or dilemma, whether this is a private "I don't know whether to do A or B!" type dilemma, or a conflict between two parties "Jo wants to live in NZ, but Mary wants to go back to the UK".

The problem with dilemmas (or conflicts) is that we usually want to do two opposite or conflicting actions, but we can't do both. The purpose of the Evaporating Cloud is to help people achieve their objectives without having to compromise by doing only one of the actions. When people compromise, no-one is really happy: both sides feel they've given in against their wishes.

So let's explore this dilemma to explain the method:

The first step is to state the conflict or dilemma clearly. In this case, the dilemma can be stated as:
"Dig out the onion weed" v "Not dig the onion weed".
We put these in two boxes joined by a lightening bolt to denote the conflict.

Next we ask, "What is the requirement that leads us to want to dig out the onion weed?" or more simply, "Why?!" The answer might be "To get rid of the onion weed." So we put this in a box to the left of the "Dig" box. Then we do the same with the "Not dig" branch … and we may answer, "To avoid erosion."

Finally we ask "What is the common objective of both "Get rid of the onion weed" and "Avoid erosion" ?" and the answer implicit in John's story is to "Have an attractive garden."

Putting all this together, we state the dilemma:

In order to have an attractive garden, I must get rid of the onion weed, and in order to get rid of the onion weed, I must dig it out;

On the other hand:

In order to have an attractive garden, I must avoid erosion, and in order to avoid erosion, I must not dig out the onion weed.

Hence the conflict!

```
┌────────────────────────┐          ┌────────────────────────┐
│  Get rid of onion weed  │◄─────────│   Dig out onion weed   │
└────────────────────────┘          └────────────────────────┘
         ▲                                      ▲
          \                                     │
┌────────────────────────┐                      ▼
│ Have an attractive      │          ┌────────────────────────┐
│ garden                  │          │  Do not dig onion weed  │
└────────────────────────┘◄─────────┤                        │
         ▲              ┌────────────────────────┐
          \             │    Avoid erosion       │◄───────────┘
           \────────────┤                        │
                        └────────────────────────┘
```
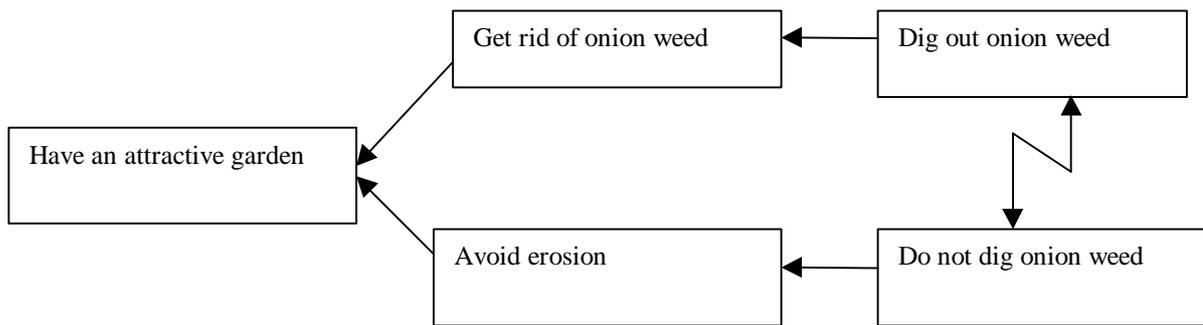
Note in passing that reading out aloud the diagram in this fashion is an essential step. The mind is much more adept at picking up phoney logic when it hears it, than when it reads it. Also note that at this stage, no reasons or "because …" phrases should be added. If some of the arrows don't make sense, reword the boxes till the logic seems plausible.

The next step is to state the reasons underlying the conflict. For example, in order to have an attractive garden, I must get rid of the onion weed, BECAUSE: *I don't find onion weed attractive*! Of course if John came to like onion weed, the problem would be solved (for him as well as for his wife who gets annoyed by his obsession with onion weed). Isn't this why we rip off wallpaper we don't like as soon as we buy a house, in case we come to like it?! Alternatively, addressing the next arrow, if he found a spray that got rid of onion weed without digging, the problem would be solved.

Often by this stage, a solution is seen, because as soon one of the arrows is found to be phoney, the conflict evaporates. Sometimes the dilemma is not as easily resolved, and the method must be used in its fullest fashion, going through each of the arrows, (including the lightening bolt arrow) and checking also that the objective is valid. Behind each arrow is at least one assumption, or reason, which is surfaced. Then we have to identify a way of breaking each assumption in turn. Lastly we pick one of these ideas and check that if it were implemented then the conflict would be resolved. In cases of chronic conflict, or issues over pay, other tools can be used in tandem with the cloud tool to work through the issue thoroughly before taking it up with the other person.

When resolving a conflict between two parties it is recommended that you work through the cloud first on your own, and then present the cloud to the other person, stating absolutely no reasons. You should also state their side first, and getting their agreement that you've understood their view, before moving to state your side of the story. There are guidelines I can send anyone interested in knowing more about these methods.

I've found the method to be very useful at making both sides feel that they've had their own way, for resolving and even avoiding conflict before it arises.

1
1 E.M. Goldratt, *"It's Not Luck", North River Press, Croton-on-Hudson, 1994.*

VICKY MABIN, Victoria University of Wellington, e mail: Vicky.Mabin@vuw.ac.nz

OR IN THE PRESS: STREET-CORNER AMBULANCES A FAST OPTION

Ambulances could be parked on street corners rather than at ambulance stations after computer experts draft a shake-up of the callout system. St John Ambulance has asked Auckland University engineers to come up with a solution to emergency vehicles becoming stuck in heavy traffic on the motorways and main route Engineers Andrew Mason and Shane Henderson will analyse the traffic problem and recommend how the service can run more efficiently. Some key ambulance stations could move to other parts of Auckland and crew rosters could be reorganised to cope with the city's increased traffic loads and changes in people's lifestyles. Ambulance drivers are also conducting trials of GPS satellite navigation systems to avoid heavily congested areas. Chief ambulance officer Steve Hutchison said the computer model was the first step in developing a more efficient and effective ambulance system. "Basically the ambulance system was based on traffic loads dating back many years. It is out of date," he said. "We should be getting to 80 per cent of calls within 10 minutes but we are not always reaching, that target." Already the computer analysis suggests that stations such as Silverdale could be better located to deal with emergencies in nearby Whangaparaoa Peninsula, which has seen a big increase in the number of retired people. "The alternative may be to keep the stations where they are and have roving ambulance crews based at key locations," said Mr Hutchison. Dr Mason said the project was the most comprehensive research done on an emergency service in New Zealand. The University's Engineering Science department has used computer models to reorganise rostering systems for Air New Zealand and the Customs service. The Auckland Regional Council has provided the team with analysis of how traffic times vary and when congestion is at its worst.

The following article appeared in the New Zealand Herald on 9 Nov 1998. More information on this project, including a software demo, can be found under www.esc.auckland.ac.nz/StJohn

KEITH PERRY

NONCONVEX NETWORK OPTIMISATION: SOLUTION METHODS AND APPLICATIONS

Abstract:

Nonconvex network flow models are used in a wide variety of problem domains involving discounting or economies of scale. Examples include network design, facility location, production planning, physical distribution, electricity transmission, and telecommunications problems. A variety of methods for solving nonconvex network flow problems have been developed in the literature; however, global optimisation of this class of problem is complex, and the convergence of the procedures slow. In this Thesis we develop techniques that can be used to enhance standard solution procedures for nonconvex network flow problems. A general theory of concave envelope analysis for such problems is presented. Based on this work, the theory of enhanced capacity improvement is developed and presented as part of a branch and bound solution algorithm for minimum cost mixed-integer nonconvex network flow problems with side constraints. Computational analysis of this algorithm is described which shows the branch and bound algorithm incorporating enhanced capacity improvement provides a substantial performance increase over the same algorithm without capacity improvement. Finally we use and extend capacity improvement to develop an algorithm for the problem of short term electricity dispatch.

GAVIN BELL, Canterbury University e mail:g.bell@mang.canterbury.ac.nz

LINDO CURES BIG TIRE PROBLEMS - APPLICATION LEADS TO AWARD WINNING PAPER

Imagine a single tire that is taller than a Pajero standing on end, weighs a little more than fourteen Toyota Camrys, and sells for about twice the price of a top-line Jeep. Suffice it to say, Bridgestone/Firestone Off-The-Road (BFOR) tires aren't for your average sports car. Finding the best way to assign these extra large tires to molds, and molds to curing ovens to maximize production was the enormous problem the plant's production scheduler faced on a daily basis.

Taking into account customer orders, mold and oven sizes, critical mold stacking restrictions, various curing times, as well as the standard requirement for quick solution times made this an extremely large and challenging integer programming problem to solve. However, using a column generation procedure hooked to LINDO (distributed in NZ by Hoare Research Software) and incorporating an innovative combination of preprocessing, cutting plane technology, and other techniques, a scheduling system was designed that produces about 7% more tires per shift than the manual scheduling process BFOR was previously using.

After evaluating the new schedules, Tom Lykens, production scheduler for BFOR for over 20 years, was well pleased, "...this is great,..I like this,...you people have no idea what I am up against every morning..." With the significant boost in production of tires costing up to NZ$140,000 each, it goes without saying that BFOR's top management was particularly happy.

And, Mr. Lykens and BFOR's management were not alone in their praise of the application. The paper, "A Tire Scheduling System for Bridgestone/Firestone Off-The-Road" authored by Zeger Degraeve of Katholieke Universiteit Leuven and Linus Schrage of The University of Chicago, was published in the November-December 1997 issue of US Operations Research. It was the winner of the Association of European Operational Research Societies prize for Best Applied Paper of the Year 1997.

The paper won the award because it demonstrated a real-life benefit to the company. It was praised for its rigorous mathematical foundations using and extending advanced operations research techniques. It was also recognized for the originality of the application. The prize was conferred to the authors at the Joint International EURO XV/INFORMS XXXIV Meeting in Barcelona, Spain.

For more details, contact Rory Fitzpatrick at HRS - 0800 477 776 or rory@hrs.co.nz Our new-look website is up: www.hrs.co.nz

RORY FITZPATRICK

POSITION WANTED – OPERATIONS RESEARCHER

Dr. Adil I Erzin, email ADIL@MATH.NSC.RU

POSITION: Sr. Researcher, Associate Professor (Part time)

AFFILIATION: Institute of Mathematics, Siberian Department, Russian Academy of Sciences

QUALIFICATIONS: 1984 Ph.D.(Operations Research/ Computer Science). Institute of Mathematics, Siberian Department, Russian Academy of Sciences - 1978 M Sc. Degree (Mathematics and Applied Mathematics)

FIELDS OF STUDY: Mathematics, Operations Research, Mathematical Modelling, Discrete Optimization, Computer Science

INTERESTS: Cost Effective Decisions; Research in Algorithmic Methods of Optimization or Discrete Mathematics; Structure Optimization of Complex Systems; Communication Network Optimization; Network Analysis, Routing (multicasting) and VLSI Algorithm Design; System Design and Analysis; Decision Support Systems; Multicriteria Problems; Approximation Algorithms; Computing Complexity, Linear, Integer and Dynamic Programming; Applications

Ph.D THESIS (Structure Optimization of Hierarchic Systems)

EMPLOYMENT: 1984 –Present: Senior Researcher, Operation Research Department, Institute of Mathematics, Novosibirsk.

For further information contact on email: Vicky.mabin@vuw.ac.nz

WAIKATO BRANCH

PEOPLE

John Buchanan has recently returned from overseas leave. He visited three colleagues in the USA over two weeks including Dr Ned Kock at Temple University, Philadelphia with whom he is working on information overload in decision making. Then for one month he was a visiting professor at LAMSADE, University of Paris at Dauphine, Paris. Living in Paris is very different from visiting! He worked with Dr Daniel Vanderpooten and began to develop some nice results on single machine scheduling from a multiple criteria perspective. He was fortunate that the metro line he took to work was one of two to be above ground (at least in part); so the Seine and the Eiffel Tower were a common and somewhat exhilarating feature of the regular commute. He also visited a colleague in Madrid and concluded with a short visit to Dublin.

PhD STUDENTS

Robyn Kamira, The Adoption of Information Technology by Maori
The objectives of this research are to investigate the processes of adoption of information technology by Maori and to identify the cultural issues that emerge from information technology adoption.

Amy Liang, The Use of Groupware Supported Web-based Collaborative Learning in the Workplace of Taiwan
This is principally case study research with organisations in Taiwan. Web based courses are being developed. One focus is on cultural determination of learning styles, within groupware generally.

Robert Wellington, Asynchronous Communication Technology: The Effects on Legitimacy in Strategic Decision Making
An ethnographic / action research approach has been used to study, in detail, one organisation and their uptake and use of email in a variety of projects. The emphasis is more on the social aspects of information technology use.

Peter Gilmour, An Expert's Approach to the Decision Making Process in a Management Environment
This research will attempt to explain why an expert approaches decision making processes as they do. It will be done by relating the expert's behaviour to cognitive style theory. Case studies of four experts have been undertaken.

Stuart Dillon, Supporting the Design Stage of Decision Making: A Meso Approach
The objective of this research is to investigate how managerial decision making can be improved through support, especially with respect to problem structuring. Both the observed decision making behaviour of actual decision makers and the prescriptive literature will be considered.

MASTERS STUDENT

Rakesh Sharma, Simulation Models for Cellular Manufacturing
The major building block in cellular manufacturing is the classification of machines into cells. The research of Rakesh focusses on testing a new, unified approach, developed by Foulds and Neumann (1996), and also on running simulation models based on earlier classification approaches.

SOME CURRENT WORK

CENTRAL CYCLES IN NETWORKS
Involving: Les Foulds (Waikato), Tadashi Yamaguchi (Muroran, Japan), John Lamb (Kent, GB), John Wilson (Loughborough, GB), Anna Schoebel & Horst Hamacher (Kaiserslautern, Germany).
We are investigating the identification of subnetworks which are centres, medians, or centroids of a given network. The case where the subnetwork is to comprise a discrete set of nodes is well known in the field of facilities location. However the graph theoretic concepts of: eccentricity distance, and subset cardinality, can be extended to subnetwork structures such as: paths, trees, and cycles. Methods which deal with the requirement that the subnetwork is to be a path or constrained tree have been reported in the open literature. We are extending this work to the case of a cycle. That is, we are developing methods for finding a cycle in a network that is somewhat central according to certain precise mathematical definitions. We began by confining our attention to networks which are grid graphs, i.e. all arcs are horizontal or vertical and link up

regularly spaced nodes making up a rectangular grid. We have now moved on to general graphs. In each case we have characterized optimal cycles, devised integer programming models and techniques, and heuristics based on tabu search and randomized procedures. The work has applications in the design of: bus routes, subway lines, ring roads, and printed circuit boards.

DESCRIPTIVE DECISION MAKING
Involving: Jim Corner, Stuart Dillon and John Buchanan.
Classical theories of choice emphasise decision making as a rational process. Consequently, a number of assumptions are made about how rational decision makers should behave. In practice, however, it has been consistently observed that these assumptions often do not hold. In response, numerous descriptive theories have been developed over the last forty years, intended to describe how decisions are made. We reviewed the decision making literature and presented a framework that classifies descriptive theories of decision making, using a theme of comparison. In addition, the paper also reports on research undertaken within a New Zealand local authority where 23 senior managers were interviewed about their decision making. Evidence of behaviour consistent with recognised descriptive theories was also investigated. It was found that few managers exhibited behaviour consistent with what is described in the literature. The major difference appears to be the lack of decision formulation contained within most descriptive theories. Descriptive theories are, in general, theories of choice and few decisions described by participants contained a distinct choice phase.
One of the frameworks we used to compare decision approaches was a two by two matrix - using the dimensions of compensation and holism. More specifically:

Compensatory and Non-compensatory Decision Making
A central distinction among different decision making strategies (theories/models) is the extent to which they make trades-offs among attributes. A model is deemed non-compensatory if, "surpluses on subsequent dimensions cannot compensate for deficiencies uncovered at an early stage of the evaluation process; since the alternative will have already been eliminated." Thus, models which eliminate alternatives through sequential comparison or assessment of their attributes are non-compensatory if, once they have been eliminated based upon the single attribute evaluation, they cannot be assessed on any other attribute regardless of their performance on these subsequent attributes. Conversely, a compensatory model "implies that a decision maker will trade-off between a high value on one dimension of an alternative and a low value on another dimension."

Holistic and Non-holistic Decision Making
Another useful comparative measure of descriptive decision making theories involves determining whether they employ holistic or non-holistic evaluative strategies. Holistic means looking at a subject as a whole rather than a number of components. It may, however, involve a more detailed analysis in order to obtain some overall value or measure. In behavioural choice theory, a holistic model is one which assesses or compares an alternative or situation as a single item and evaluates each alternative in a non-sequential manner. In contrast, a non-holistic or reductionist model is one which compares alternatives on an attribute-by-attribute basis. This may involve looking at every detail of a particular alternative and comparing it with another alternative or some threshold, a threshold being a maximum or minimum value with which a given attribute must reach or exceed.
The framework is then simply:

	Compensatory	Non-Compensatory
Holistic		
Non-Holistic		

Different decision models or approaches tend to "fit" in certain areas. A question we are interested in is whether people will more naturally operate in one particular area of the framework. Should they operate in a particular area?

TRANSPORT INEXPLAINABLE

Rare Canadian photo. It shows two dogs wearing dark glasses on a sunless day. A third dog is wearing motoring goggles. The wheels of all the carts are in a ditch. The boy drivers all look baffled and I'm not surprised. Any reader who can give a rational explanation to this picture is welcome to it.

JOHN BUCHANAN, Waikato University, e mail:jtb@waikato.ac.nz

NEWS FROM AUCKLAND

Recently we farewelled Mike Saunders (from the Skytower revolving restaurant, no less), who has returned to his research position at Stanford University. During his visit, Mike taught a graduate course on nonlinear programming, gave several seminars, and was a keynote speaker at the ORSNZ 33rd conference. Also outbound is Azim Houshyar, who continues his sabbatical from Western Michigan University elsewhere. Azim taught courses in reliability and simulation, and was also a keynote speaker at the ORSNZ 33rd conference. Azim is a keen walker, and must have covered 8,000 km on foot while visiting us. Thanks for your contributions, Mike and Azim. You'll certainly be missed!

We have several visitors to the Engineering Science Department this summer. Horst Hamacher is visiting from the University of Kaiserlautern, Germany. Horst is Professor of Econo Mathematics and Deputy Director, Center for Techno and Econo Mathematics (ITWM). Eddie Anderson, Professor of Operations Management at AGSM is visiting the week of December 7th, sponsored by the Auckland University Centre for Network Economics. Golbon Zakeri from Argonne National Labs is also visiting this month. And just before Mike Saunders returned to Stanford, Bruce Murtagh from Macquarrie University arrived to briefly unite the dynamic duo!

Andrew Mason and Shane Henderson are continuing their work with the St. John Ambulance Service Auckland Region. They've been having fun with 500 MB text files (yes, that size is correct) containing call information, simulations that last forever, and shortest path problems (all pairs) on several thousand nodes. Nothing like large scale problems!

The final year undergraduate students recently completed their fourth year projects and, as we speak, are each earning more than the academic staff of Engineering Science put together! You can find abstracts of their OR, Continuum Mechanicset projects at
http://www.esc.auckland.ac.nz/Research/Fourth_year_projects/1998.html If any catch your eye, then let Debbie (d.kelly@auckland.ac.nz) know you'd like a copy.

We all breathed a collective sigh of relief after the end of the ORSNZ 33rd conference. Mothers and baby are all doing well. You can find the online conference proceedings at
http://www.esc.auckland.ac.nz/ORSNZ/conf33/abstracts.html

SHANE HENDERSON, University of Auckland, e mail:sghenderson@auckland.ac.nz

JOB VACANCY

CONSULTANTS – INFORMATION/QUANTITATIVE ANALYSIS

A.T. Kearney Management Consulting

Competencies/Skills/Experience required

Contact: Joanna Gore, Associate, A.T. Kearney Executive Search, Sydney
Tel: 61 2 9259 1905 Facsimile: 61 2 9259 1800 e mail:joanna.gore@atkearney.com

OR JOURNALS

Series of over 300 Journals of the UK Operational Research Society 1964-97 looking for a home (just one or two missing issues). If no one claims, they will be junked.

If interested please e mail: andrew.smith@moc.govt.nz or Tel: 04 474 2628 (Wk)

MAINLAND NEWS

As many people will know, on 31st January 1999 Hans Daellenbach officially retires from the University of Canterbury. Hans has made a considerable contribution to the development of OR both within New Zealand and overseas. Those of us who have had the privilege of working with Hans are greatly indebted to him for his mentoring, guidance and encouragement. His wealth of experience, insights and humour will be sorely missed. He has assured us that he won't disappear off the face of the earth, and may even visit us from time to time! Anyway a huge thank you Hans for all the work you've done over the years. A farewell dinner for Hans will be held on the 13th March. Anyone interested in attending the dinner can contact me at r.james@mang.canterbury.ac.nz and I will let you know of the details as they come to hand. Also please note our request for your favourite"Hans' Tales" which we will be collated for his farewell dinner and the best published in the next OR Newsletter.

Continuing on our series of recent staff additions in Management Science, in this issue we focus on our second appointment in optimisation. John (Fritz) Raffensperger completed his Ph.D. in 1997 at the University of Chicago's Graduate School of Business. His thesis was to do with optimising Military Readiness. From 1997-98 he completed a postdoctoral fellowship at the Naval Postgraduate School. His interests in management science range from dynamic programming and column generation, to portfolio optimisation, transportation and logistics, inventory control, and using operations research to improve child welfare. Currently, he is writing an article about the elements of style in computer spreadsheets.

On 2nd November Olly McCahon, who has been both a part-time staff member and part-time PhD student in the department, took up a position at Forest Research Institute in Rotorua as an OR Modeller. Also leaving us in November was Tristram Scott, who after completing his PhD at Canterbury worked for several years with the Energy Modelling Research Group. Tristram is moving to England to work for Caminus Energy, an energy consulting firm in Cambridge. Congratulations are also in order for Gavin Bell who has completed his PhD. His thesis entitled "Nonconvex Network Optimisation: Solution Methods and Applications" was examined and successfully defended in October. Gavin has also been offered a position with Caminus Energy.

Over the last three months we have had Professor Snjolfur Olafsson visit the department on sabbatical from the University of Iceland. He has given us a couple of seminars on his research which include aspects of OR in group decision making and the evaluation of public transport projects. It was amazing for us to learn how many tunnels are built in Iceland for the sake of a few hundred people.

Next year we have two visitors in the Management Science area.

The first is Professor Werner Ulrich from the University of Fribourg (Switzerland) and the Lincoln School of Management, University of Lincolnshire & Humberside. He will visit the Department of Management as an Erskine Visitor from the 1st March through to the 31st May. A former student of C. West Churchman, Professor Ulrich has an international reputation for his work in 'Critical Heuristics of Social Planning' and 'Critical Systems Thinking'. He will offer a course on aspects of systems thinking and its use for problem solving while he is here.

The second, Professor Jack Kleijnen from Tilburg University (Netherlands) will visit the department as an Erskine Visitor in May and June. Professor Kleijnen is the Professor of Simulation and Information Systems at Tilburg University. His research interests include simulation, mathematical statistics, information systems, and logistics. He will be teaching our honours students in the areas of simulation and the design of simulation experiments.

ROSS JAMES, University of Canterbury, email:r.james@mang.canterbury.ac.nz

WANTED HANS' TALES

Hans Daellenbach is retiring and we want to collect your favourite "Hans' Tales" as a tribute to the contribution he has made to OR in New Zealand.

* Have you got a favourite story about Hans you can tell us about? * Is it interesting or funny? * Is it true (or at least partially true)?

If so then send your Tale to   Ross James, Department of Management, University of Canterbury, Private Bag 4800, Christchurch or email: r.james@mang.canterbury.ac.nz

The best tales will be published in the next issue of the OR Newsletter.

REPORT ON ORSNZ 33rd ANNUAL CONFERENCE

The 33rd Annual Conference of the OR Society of New Zealand was held at the University of Auckland from 31 August to 1 September 1998.

The conference went off with the expected smooth precision that has characterised the Society's conferences and the Department of Engineering Sciences at the University of Auckland, in particular. Andrew Mason, Shane Henderson and their committee are to be congratulated on bringing together an interesting set of papers and organising a memorable occasion. We recognise the kind sponsorship of Air New Zealand and Hoare Research.

Keynote addresses were given by Azim Houshyar and Mike Saunders. Contributed papers ranged form "Yacht Match Race Simulation" to "Concave Envelope Analysis in Non-convex Optimisation: to "Pedagogical Strategies for Teaching of ORMS". They continued to demonstrate the variety of interest and expertise in OR in this country. Something for which we can be justifiable proud.

As we have come to expect the Young Practitioners papers were again a highlight of the conference. I congratulate all of the participants on interesting and valuable papers with special congratulations to the winners. There had to be a winner (and hence losers) but that should not detract from the overall excellent standard.

There were several occasions when we were reassured that this was a "fair dinkum" ORSNZ conference and not some foreign counterfeit:

- "Reservoir management with something or other". By Grant Read et al,
- "Modelling the Flight Attendants Tours of Duty (or was it Aircraft Scheduling?), by David Ray et6 al,
- "Shift generation for NZ Customs improved and revisited again".
- "The Theory of Constraints with its Normal Evangelical Zeal". By Jonah V Mabin, et al,
- "Scheduling Forest Harvesting with some other twist:. Was it the Auckland or Canterbury mafia this year?
- Vehicle Routing and…", by Catherine Rivers taking over the Foulds/Giffin mantle. I hope no-one mentioned. Or implied, has taken offence!)

At the same time some of the hoary chestnuts were missing and so were their various exponents. Perhaps in the future we will have some new old faithful- I hope so because that will ensure we retain our distinctive character.

If there was aun undesirable trend continuing in the conference it was the decreasing proportion of industry and private sector participants. But that is not a new problem.

JOHN GEORGE, e mail:jgeorge@core.co.nz

MEETINGS CALENDAR FOR 1999 AND BEYOND

Western Decision Sciences Institute, 28th Annual Meeting: 6 - 10 April 1999, Puerto Vallarta, Mexico
Email:mnicholls@swin.edu.au or http://faculty.mckenna.edu/wdsi

INFORMS Cincinatti Spring 1999 Meeting: 2 - 5 May 1999
Chair: David F. Rogers, University of Cincinnati, Ohio, 45221-0210, USA
 David.rogers@uc.edu

3rd International ICSC Symposia on Intelligent Industrial Automation: 1- 4 June 1999, Genova, Italy
Conference Organiser: operating@icsc.ab.ca

5th International Conference of the Decision Sciences Institute: 4 - 7 July 1999, Athens, Greece
Contact: http://www.dsi99.athens.aueb.gr

ASOR National Conference: 4–7 July 1999, Gold Coast, Queensland, Australia
Email:asor@fsc.qut.edu.au or http://www.math.fsc.qut.edu.au/asor

New Zealand Statistical Association 50th Anniversary Conference: 5 – 7 July 1999, Victoria
University, Wellington New Zealand
Contact: Conference Secretary, PO Box 1731, Wellington, New Zealand
E mail:NZSA99@mcs.vuw.ac.nz Web page: http://www.mcs.vuw.ac.nz/

6th International Conference of the United Kingdom Systems Society, 5 – 9 July 1999, Lincoln Campus,
University of Lincolnshire and Humberside United Kingdom
Contact: Doreen Gibbs, Lincoln School of Management, Lincolnshire and Humberside University,
Brayford Pool, Lincoln LN6 7TS
Tel: 01522 886 202 Facsimile: 01522 886 032 email: ukss99@lincoln.ac.nz Web page:
http://www.lincoln.ac.uk/lsm/ukss99/

17th Conference of the International System Dynamics Society and 5th Australia New Zealand Systems
Conference: 20 - 23 July 1999, Wellington, New Zealand.
Deadline for papers 1 May 1999
Conference Manager: Margaret Stevenson-Wright, Graduate School of Business and Government
Management, Victoria University of Wellington
Tel: 64 4 496 5452 Facsimile 64 4 496 5459 email: Margaret.Stevenson-Wright@vuw.ac.nz

IFORS '99 Beijing: 16 - 20 August 1999, Friendship Hotel, Beijing, China
Contact: Ms Loretta Peregrina, IFORS Secretariat, Richard Ivey School of Business, University of
Western Ontario, London, Canada N6A 2K7
IFORS@Ivey.uwo.ca
Deadline for electronic submission of abstracts: December 31 1998, Fee (non refundable) US$100
Follow instructions on http://www.IFORS.org/leaflet/triennial.html **or**
IFORS@Ivey.uwo.ca,subject:HELP
 IFORS OR in development prize: contact Dr Elise Del Rosario, elisear@sanmiguel.com.ph

10th Mini Euro Conference, HCP'99, 20 – 24 September 1999, Brest, France
Abstracts by 31 January, 1999
Contact: Ghislaine Le Gall, Departement IASC, ENST Bretagne, BP 832, 29285, Brest cedex –France.
Tel 33 2 9800 1425 Facsimile: 33 2 9800 1030 e mail:Ghislaine.LeGall@enst-bretagne.fr or
 http://www.iasc.enst-bretagne.fr/hcp99/

26th International Conference on Computers and Industrial Engineering, 8 – 10 December 1999,
Melbourne, Australia
Contact: Paul; Lochert, Monash University, PO Box 197, Caulfield East, Vic 3145, Australia
Tel: 61 3 9903 2647 Facsimile: 61 3 9903 2227 e mail: p.lochert@sci.monash.edu.au