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NEWSLETTER

Operational Research Society of New Zealand (Inc.)

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

EDITOR: Susan Nicoll,
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Private Bag,
WGTN.

FEBRUARY 1984

Letter from the Editor

With March comes the start of the academic year - a good time for us to look at the students among us. The number of OR students at last year's Wellington Conference was disappointing and student membership of our society is low. Concern was expressed at both the National AGM and Wellington Branch AGM. Motions from the floor urged the investigation of assistance to students attending the annual conference. No sooner said than done: Tony Vignaux presented the case for a 'Student Conference Bursary' at the last council meeting. Much discussion ensued, resulting in two recommendations for the 1984 conference: firstly, that the conference fee for students be nominal and secondly that two or three travel subsidies be available to assist students travelling from other centres (details to come). However, for these measures to be effective, students are going to need encouragement to attend from university OR staff, i.e. take a hint! Tony is taking charge of our 'Students Drive' so any thoughts to him please.

Student research doesn't often focus on the 'social' aspects of OR in NZ. We have just heard from Inn Tong Ooi, an MBA student at Massey University, who is undertaking a project on 'Corporate OR Activities in NZ'. The project involves a survey to be distributed in early March to private companies. If you are contacted, it would be worthwhile replying as the survey could possibly produce information useful to our society. Plus we should be encouraging students who undertake OR projects!

Sue Nicoll
Editor

DR DEMING TO VISIT NZ

Dr William Edwards Deming has been named by "Time" magazine as "The world's foremost authority on quality control techniques". As well as being a widely respected expert in applied statistics, Dr Deming is credited with having laid the foundations of the Japanese Quality Revolution.

Dr Deming follows a non-stop schedule of consulting and lecturing around the world. His clients include manufacturing companies, freight carriers, government agencies, research organisations, hospital and legal firms. He is the author of eight books and numerous articles in quality management, physics, psychiatry, maths and statistics.

In 1951, in recognition of Deming's assistance to Japanese industry, the Japanese Union of Scientists and Engineers instituted the Annual Deming Awards to honour the Japanese individual and firm who had most advanced the cause of Japanese industrial quality. These fiercely contested awards are presented to the winners each year during a nationwide television broadcast.

In 1960, Emperor Hirohito of Japan awarded Deming the medal of the Sacred Treasure, Second Order. Deming is the only American holding this award.

A group of people interested in seeing NZ industry effectively adapt itself to changing economic circumstances, have invited Dr Deming to NZ with the aim of exposing NZ company management first-hand to this renowned figure's views. The visit will take place from April 30th to May 11th, 1984. The main activity during the visit will be a 4-day course for management, entitled "Quality, Productivity and

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Box 904,
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Auckland Branch
c/- Dept 7AM
Auckland University
Auckland

Canterbury Branch
c/- Economics Department
University of Canterbury
Christchurch

Competitive Position", to be run at the Sheraton Hotel in Auckland from May 8th-11th. The enterprise is being run as a non-profit-making venture, with any financial surplus that may arise being set in trust for follow-up educational and promotional activity in Productivity and Quality.

Dr Deming has been awarded a visiting Fellowship from Victoria University and will be giving a public lecture in Wellington during his visit. It is hoped that other short talks will also be arranged throughout the country, more details on these to be available later.



O.R. IN EDUCATION

VICTORIA UNIVERSITY
Institute of Statistics and
Operations Research

Changes in OR Teaching

On 1st January 1984, Dr T K Sarkar and Professor G A Vignaux moved from what was the Information Science Department at Victoria University to the Mathematics Department. At the same time some changes in the teaching of Operations Research took place. The changes are a consequence of a University decision to put significant resources into Computer Science teaching at the University and to rename the old department the Department of Computer Science with a new professor of Computer Science, John Hine.

From 1984 Operations Research will be taught at both second and third year within the Mathematics Department but with separate labels. The second-year course, entitled "Data Analysis and Operations Research" is a mixture of exploratory Data Analysis and introductory Operations Research techniques.

All graduate teaching Operations Research and Statistics will be transferred to the Institute of Statistics and Operations Research, an organisation having members from many departments within

the University and some active members from outside organisations. The Chairman is elected annually, the current holder being Professor G A Vignaux. In taking over the graduate teaching of Operations Research, all Honours, Masters and PhD teaching will of course come under the umbrella of the Institute and the Dip O.R.S. teaching will remain there. A much closer association of the two subjects, Statistics and Operations Research is a particular characteristic of the new course structures. The core course in the graduate programmes will cover the basic foundations of both subjects and students will be able to take an approved mixture from a number of optional courses. The opportunity has also been taken to include a wider range of options, including Econometrics and Demography.

The Dip.O.R.S. remains, as it has been for a number of years, a practically-oriented version of the Honours programme with the possibility of taking some 3rd year courses as well. A core course involving case studies and practical statistical methods and a significant practical project are also required.

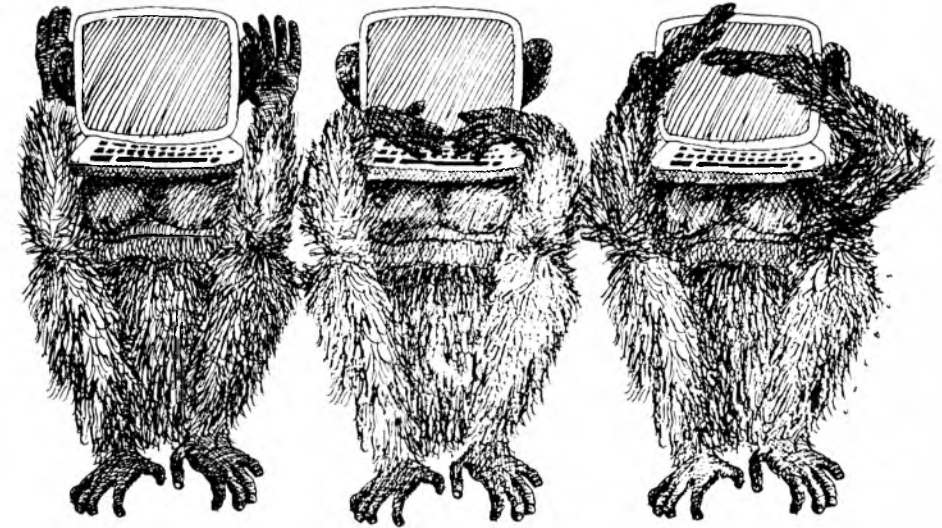
Just a word about the Institute; it was formed in October 1974 and has 3 basic missions.

1. To act as a general forum for Statistics and Operations Research matters throughout all departments of the University.
2. To offer a Statistical Consulting and research service both within the University and without. For this, it employs the University Statistician and a professional assistant as Statistical Consultants to staff and research students and to a lesser extent to bodies outside the University.
3. To administer all graduate teaching in Statistics and Operations Research.

The Institute also presents occasional non-credit courses on Statistical Computing Systems (such as SAS, SPSS and Minitab) and, in conjunction with the Department of Continuing Education, more general courses in Statistical and OR subjects. Very successful courses were run in 1983 on "Using Data in Industry", "Looking at Data with Minitab" and "Making Figures Work".

The V.U.W. Institute of Statistics and Operations Research (ISOR) is located at 44 Kelburn Parade, Wellington with the telephone number 721-000 ext 869.

G A Vignaux



Felicity Ferret's Gossip Column

New South Wales, Australia, must be a good place to be just now: Bruce Rothwell (formerly MWD, HO) is now supervisor of the analytical services group with the Australian Gas & Light Co. Bruce Murtash is also alive (presumably well) and a professor in the Industrial Engineering Dept of NSW University.

Working for SAS Institute must have benefits. Kevin Hall became Manager of SAS NZ late last year, and more recently Trevor Kearney left for America to work with them there. All this after the last editor, Mark Houlston, absconded to the Singapore Branch!

Anne Spence, formerly an OR student at Canterbury University is now studying at Stanford University.

People are always on the move and it's interesting to know where to. Several bits of news have floated my way of late, so I thought it a good time to start a gossip column. Drop me a line anytime with anything you hear (Felicity Ferret, PO Box 904, Wellington).

DIVISIONAL NEWS

WELLINGTON

Peter Mellalieu (MAF/DSE) gives the first talk of the year on the 29 February. Pete spent six months overseas last year studying latest technologies and possible applications in NZ. In his talk he discusses these and more, as the review in the next newsletter shall reveal!

Another three meetings have been scheduled: on 29 March (7.30pm), Alan Singer (Dept Bus. Admin, Vic Uni) will talk on 'Competing Explanations of Irrational Choice'; Brian Easton and Graeme Wells talk about 'Economy-wide Models in NZ' on the 3 May (12.30pm); and on the 31 May (12.30), Tony Vignaux will talk on 'Police Control Room - a case study'.

CONFERENCES

1984 March	4-6	5th MUGA Meeting by Haverly Systems Ltd (Singapore)
	11-14	ORSA/TIMS Marketing Science Conference (Chicago)
	26-30	Technobank '84 - International Exhibition of Technologies and Services for Banking and Finance (Geneva)
April	2-5	'OR in Resources & Requirements in 5th Africa': (Pretoria)
	3-5	UK Young OR Conference (Nottingham Uni)
May	2-4	"Optimisation Days 1984" (Montreal)
	14-17	I.C.C. '84 (Communications) - (Amsterdam)
	22-24	Canadian Annual OR Conference (Ottawa)
July	8-11	4th International Symposium on Forecasting (London)
August	6-10	IFORS X (Washington DC)
	13-15	Simulation Society of Australia, 6th Biennial Conference (Adelaide)
	20-24	2nd Latin American OR Conference (Buenos Aires)
September	4-7	UK Annual OR Conference (Lancaster)
	10-14	6th International Congress of Cybernetics & Systems (Paris)
	23-28	AGIFORS Symposium (Strasbourg, France)
October	10-13	"Targetting Strategy Formulation & Implementation" - 4th Annual Strategic Mgmt Society Conference (Philadelphia, USA)

1985
March 12-14 IFAC Workshop on AI & Pattern Recognition in Economics & Mgmt (Zurich)

July 3-7 7th IFAC/IFORS Symposium on 'Identification & System Parameter Estimation' (York Uni, UK).
Deadline for receipt of abstracts: 31 March 1984

Further details can be obtained from Vicky van den Broek-Mabin, PO Box 904, Wellington.

Our own 1984 conference is to be held on 20-22 August (not 22-24 as stated in the last newsletter). A workshop will be held on the first day to be followed by a two-day conference.

Prince & Princess of Wales Science Awards Scheme

Council decided at their last council meeting (16 February) to make a once only contribution of \$200 to the scheme. Although they feel the scheme has merit, they did not feel it was very likely that anyone from our Society would benefit.

Twentieth Year Celebrations

This year is the Society's 20th birthday and what we need are some good ideas of how to go about celebrating! Gib Boyle suggests we go to the pub, what do you think? Send any suggestions to Bruce Benseman, PO Box 1335, Wellington.



Lost Members

Would anyone knowing the current addresses of the following members please pass them on to the treasurer, Karen Garner (ph 727-855, PO Box 904, Wellington):
Lou Boon Hwee ex Cant. University
P. Lee ex "
Craig Longhurst ex Dalhoff & King NZ Ltd

WELCOME TO NEW MEMBERS

Bill Armstrong Technometric Associates, Wellington
Rona Bailey Econ. Dept., Cant. Uni, (student)
Paul Freeman Sheffield City Polytechnic, UK
Greg Mehrtens University of Canterbury (student)
David Patterson University of Canterbury (student)
Alan Singer Business Admin, Vic. Uni.
As well, NZ Steel has become a corporate member.

I hope your associations with the society prove to be long and profitable.

METHODS OF OPERATIONS RESEARCH New Publications

Volume 45

VII. Symposium on Operations Research Section 1.-3.
Edited by: Hans Loeffel/Paul Staehly (St. Gallen)

Contents (main chapters):

- Continuous Optimization, Optimal Control
- Discrete Optimization, Graphs
- Computer Science, Data Analysis

519 pages, softbound, DM 148,-

Volume 46

VII. Symposium on Operations Research Section 4.-9.
Edited by: Hans Loeffel/Paul Staehly (St. Gallen)

Contents (main chapters):

- Statistics, Stochastics, Econometrics
- Mathematical Economics: Theoretical Models
- Mathematical Economics: Game Theory, Decision Theory
- Applications: Money, Banking, Insurance
- Applications: Marketing, Production, Investment, Finance
- Applications: Public Sector

744 pages, softbound, DM 198,-

Volume 47

Contents:

- Mixed Exterior-Interior Penalty Methods Revisited
- A Locally Most Powerful Test for Outliers in Samples from the Exponential Distribution
- Decentralization of Stochastic Dynamic Economic Systems

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- The Relative Efficiency of the First Difference Estimator in Linear Models with Highly Correlated Errors
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- Der Rand des zulassigen Bereichs beim stochastischen linearen Optimieren mit Wahrscheinlichkeitsrestriktionen
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I.F.O.R.S.

INTERNATIONAL FEDERATION OF OPERATIONAL RESEARCH SOCIETIES

Letter from the president

THE AGE OF OUR PRODUCTS

No. 14, February 1984

It is a wisdom in marketing that products age and die. A product may still be inherently useful, but if the marketplace has tired of it then it should be abandoned for something with more appeal. How long products can endure before their demise depends on the product and the market: months for pop-music, a couple of years for washing powder, perhaps a decade for a car. Very few products survive to their age of majority! But what of our products, the products of OR?

What are our products? If we take the prevailing content of our journals, our books, and our education programmes, the products of OR seem to be mainly mathematics, especially algorithms, and - in some cases - corresponding computer codes. Although most of the basic innovations, particularly most of our standard algorithms, are over 20 years old it seems as if the structure of our products has not changed since. The OR community has indeed produced the extremely powerful simplex algorithm (plus computer codes), network planning algorithms, implicit enumeration principles, simulation tools, mathematics of stochastic processes etc.; but are these the products that meet the demand of the market of today and of the future?

Do our potential customers ask for linear programming software or for decision support systems (LP software included)? Does industry require branch and bound codes, or do they want comprehensive expert systems (branch and bound tools included)? Do the enterprises need software for specific flow maximisation algorithms, or do they cry for complex logistic systems (those algorithms included)?

There seems to be a tremendous demand for contemporary OR products. They have to offer, however, more than just a mathematical technique. Instead they have to give expert answers to problem areas (based upon our many efficient mathematical tools)! The current tendency is that others (for instance our colleagues from information processing) take our expertise and produce the products for private enterprises and public authorities. Why do not we take the lead in designing and marketing decision support systems, expert systems, and information systems for the fifth computer generation? We need not only to invent new wheels, but to sell our wheels, old and new!

Heiner Müller-Merbach
President of IFORS

QUEUING AND COMMUNICATIONS

A talk presented at the 20th AGM in Wellington, 17 November 1983 by Dr D McNickle (Operations Research, Canterbury University).

Dr McNickle started his talk by bringing on a "hand-held" calculator, making a few incantations, and pressing some of its buttons. The machine (which might have fitted into a very large overcoat pocket) continued to mutter to itself during the course of his talk.

Dr McNickle pointed out that most undergraduate OR texts use pretty trivial examples of queuing applications and the more interesting ones such as those in telecommunications and computers are often ignored. This is because they require the analysis of queue networks rather than isolated queues and are therefore felt to be too complicated to analyse. He showed that on the contrary the steady-state solution of Jackson networks is relatively simple and can be very fast; much faster than you would expect from considering the enormous number of system states that require their probabilities calculated. This efficiency is because one can calculate the state probabilities for each of the queues independently once you have obtained the traffic flow through them.

Dr McNickle contrasted the incredible accuracy of the telephone engineers' device-oriented computing methods with that of queue network models. With new technologies such as packet networks the device-oriented approach is no longer appropriate and ways of improving accuracy and speed are needed. Buzen's algorithm for the calculation of probabilities of millions of states shows that at least we can make some start towards the more accurate analysis of complicated queue networks.

The calculator outperformed its programmer's intentions and suddenly, in the middle of the talk, disgorged the results of the calculation of the complicated queue network McNickle had described earlier. Though the machine with all its peripherals was a little larger than pocket size, the program was an example of true miniaturisation - the listing measuring 123 x 42mm! This impressive demonstration underlined the power of both the new techniques of queue network analysis and of small microcomputers and rounded off an impressive and interesting talk.

G A Vignaux

BOOK REVIEW



In Search of Excellence
Lessons from America's best-run companies
(by Thomas J Peters &
Roberts H Waterman Jnr)

A hard critical and enlightening look at management techniques used by more than forty highly profitable American businesses.

What is the secret of successful management? Why does one corporation's productivity seem to soar effortlessly while another similar company struggles to keep from going under?

Robert H Waterman Jnr, of McKinsey & Company, one of the largest consultant firms in the US, and Thomas Peters, President of Palo Alto consulting Center and lecturer at Stanford Business School, launched a study of management techniques to answer these questions.

Probing the inner workings of such companies as IBM, Texas Instruments and 3M, the authors discuss in depth eight basic practices they found characteristic of successfully managed companies. They present case histories that show how a willingness to experiment pays off and how ideas are solicited, and they detail how and why these eight particular practices work.

Many American corporations, say the authors, tend to be too short-sighted and profit-oriented to permit experimentation and innovation, and in many cases managers are often prevented from participating in the decision-making process. Challenging the domination of "rationalism" without advocating exclusive devotion to "human management" is where Peters and Waterman say the answer to a successfully managed firm lies.

No business manager or executive will want to be without the new information and fresh perspectives on management strategies found in this revealing new book.

In Search of Excellence is one of those rare books on management that are both consistently thought-provoking and fun to read.



20th ANNUAL CONFERENCE

AT

AUCKLAND UNIVERSITY

TUESDAY, 21 AUGUST & WEDNESDAY 22 AUGUST 1984

CALL FOR PAPERS: Copies of papers presented at the Conference will be distributed to participants.

PAPER DEADLINES: Abstracts are to be submitted by 27 April 1984. Final typed manuscript by 29 June 1984. Typing instructions will be issued after receipt of abstracts.

CONFERENCE COSTS: Initial estimate is \$60. for members.

Registration Forms can be obtained from the Conference Organiser.

Send Abstracts & Papers to:

Enquiries to:

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WORKSHOP ON INVENTORY & PHYSICAL DISTRIBUTION

MONDAY, 20 AUGUST 1984 - 1 DAY PRECEDING CONFERENCE - CALL FOR CONTRIBUTIONS

(SHORT PAPERS, VIDEOS, CASE STUDIES):

A description of contribution to be submitted by 27 April 1984. Final copies of any typed contributions by 29 June 1984.

WORKSHOP COSTS: Initial estimate is \$120, including Lunch & Teas.

PROF. HARVEY WAGNER, Internationally-reknown Inventory Consultant (& Art Connoisseur) is likely to participate in this Workshop and the following
NZOR Society Annual Conference.

Send Description of Contribution & Any Papers to:

Workshop Organiser, C/O T.A.M. Department, Engineering School,
Auckland University, Private Bag, Auckland.