NEWSLETTER

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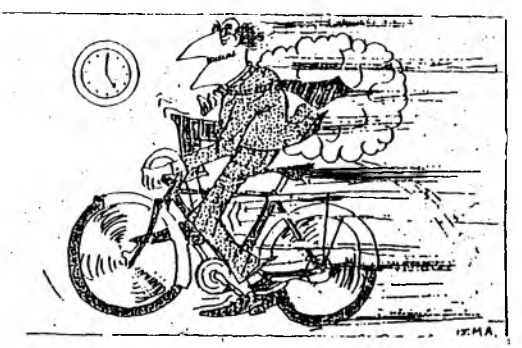

CONFERENCE

2 - 3

SEPTEMBER

at

VICTORIA UNIVERSITY

WELLINGTON

followed

by

DANTZIG WORKSHOP

(4th SEPT)

N.Z. Council
Box 904,
Wellington

Wellington Branch
Box 904,
Wellington

Auckland Branch
C/- Dept TAM
Auckland University
Auckland

Canterbury Branch
C/- Economics Department
University of Canterbury
Christchurch.

A system is a big black box
Of which we can't unlock the locks,
And all we can find out about
Is what comes in and what goes out
Perceiving input-output pairs,
Connected by parameters,
Permits us, sometimes, to relate
An input, output and a state.
If this relation's good and stable
Then to predict we may be able,
But if this fails us—heaven forbid!
We'll be compelled to force the lid!

Kenneth Boulding

FORTHCOMING CONFERENCES

June	16-19	EURO VII; 7th European Congress on O.R. (Bologna)
July	8-11	5th IFAC/IFIP/IFORS Int. Conf. on Control in Transportation Systems (Vienna)
	8-19	School on Combinatorial Optimization (Rio de Janeiro)
Sept	10-12	2nd IFAC/IFIP/IFORS Conf. on Analysis, Design, and Evaluation of Man-Machine Systems (Varese, Italy)
Nov	17-20	2nd Mini EURO Conf: "Expert Systems & AI in DSS:An OR Interface to Management" (Lunteren,Netherlands)

Further details available from Vicky van den Broek-Mabin, Box 904, Wellington (ph. 727-855)

REVIEW

PROJECTIVE LINEAR PROGRAMMING: A MAJOR BREAKTHROUGH?

50 Times Faster than MPSX/LP

A Fast Way to Solve Hard Problems

A new algorithm to solve linear programming problems is so fast that experts in the field are taken aback

Science, Vol 225 (Sep '84)

Out of the door, on to the bike, off to the newsagents. I've just had the word over the wire, you see : " Did you read the Times article? "

Wow, an OR technique in the headlines - unheard of - as is someone with hands on experience, reaching the outbacks a few weeks later, prepared to talk about it. The someone in this case, being Dr Martin Fieldhouse of Haverly Systems. Martin spoke at all four ORSNZ branches, of Haverly's experience with Karmarkar's LP algorithm - a method of projecting an n variable, m constraint problem, into an n dimensional simplex, centred around a feasible point. The method then selects a new feasible point near the circumference of a hypersphere inscribing the simplex. Further details available in the paper Martin left with each meeting organiser.

Were the big breakthrough claims true? It appears not. Nothing like a few test problems to sort out the algorithms from the neat algebra. Indeed it seems difficult to begin to justify the claims at all - old O.R. teachers with dog-eared notes on the revised simplex need not have feared. There seems to be too much emphasis being placed on complexity theory; on proofs of an algorithm being able to run in worst-case, polynomial time, and not enough on the numerical difficulties of a working computer program - shades of earlier years in integer LP, and the need to prove "finite convergence" to gain that algorithmic respectability.

Is Karmarkar's algorithm likely to be of any use? Well, according to Martin, in a few years time when similar numerical clout that has gone into fast revised simplex is brought to bear, then Karmarkar might be used in the earlier stages of an LP run. Or perhaps its use will be to spark a race to find Dantzig's real successor.

Martin further entertained us over coffee (none of the "have it at the Midland" bribery here, note Wellington)* with frightening talk of the licensing requirements for moving software out of the country (soon?) to appear in GB, but of US origin. Computers (for oil) ending up behind the Iron Curtain is one thing, but red software is another color altogether. The legislaton sounds rather inconsistent and looks very hard to police (Is data to run a fourth level software package data or software? Why the emphasis on tapes? etc) Martin thinks there will be a search for a test case and has no intention of providing one.

Well there has to be a lesson in this somewhere, and I think I've just found it. Next week, when I've made that big breakthrough and the reporters come a-knocking wanting to know how good it all is, there will be no rounding up to the nearest 10's digit - the answer's simple - its "42" of course.

My thanks to all those who had a hand in organising Martin's presence - one of the more interesting meetings I've been to.

John Scott
Hamilton Branch

* The Midland is strictly open air these days. And de Bretts, Wellington Branch haunt of recent times, has also succumbed in the name of "progress". (Ed)

WELCOME TO NEW MEMBERS

Matthew Civil - Dairy Board

Peter Cox - State Coal Mines

Ms Robyn Green - Victoria Uni. (Student)

Mr R.D. Hughes -Management Consultant

LIBRARY

ORSNZ subscribes to most journals pertinent to the practice and theory of OR. The volumes are housed at the Applied Maths Div. (DSIR) Library in Wellington. Journals may be borrowed from this source or university libraries through interloan.

I.F.O.R.S.

INTERNATIONAL FEDERATION OF OPERATIONAL RESEARCH SOCIETIES

letter from the president

OPERATIONAL RESEARCH AND NEW TECHNOLOGIES

No. 28, April 1985

New technologies are chasing our world. They are fascinating for the insiders and frightening for the outsiders even if they may me benefiting from them as well.

We can learn from more than a hundred years of industrial development that technical progress leads to economic growth and social change. This can be observed at the level of the world, at the level of its nations, and at the level of the single enterprises. And it can be illustrated by means of any branch of technology, be it information and communication, traffic and transportation, materials and material processing, energy production and conversion etc. Can the experience from the past be extrapolated into the future? Or does the increasing speed of the technological progress cause new structures of the world's development? The case of Japan and some other Asian nations shows that formerly less developed countries could make it and join the race for future technologies. Will such entries still be open in the future, or will the development of new technologies become the prerogative of two, three, ..., six nations?

Where will the new technologies direct us, the individuals, the enterprises, the nations, the equilibrium of the world - or do we direct the new technologies?

The investigation into these questions is a challenge for Operational Research. Why? The answer follows from our self-unterstanding as defined by the Operations Research Society of America in the brochure "Careers in Operations Research" (ca. 1977): "Operations Research is concerned with scientifically deciding how to best design and operate man-machine systems, usually under the conditions requiring the allocation of scarce resources."

It may well be that the man-machine systems of the future will be quite different from today's and that we have to experience fundamental changes in the scarce resources. Labour force may - through information processing, robotics etc. - cease to be scarce. Instead, employment may become the general bottleneck of future's society, not only in the industrialised nations. Only in the domain of well trained specialists and managers of technology a shortage may remain.

Also, education may have to be redefined. Knowledge may not remain a property of the individuals, but become a property of man-computer tandems.

Cost structures will change: The ratio of direct costs and fixed costs will continue to decrease. The markets will change - through new information technologies. The investment and R&D processes will become more crucial. Trade and finance equilibria between enterprises and between nations might become more difficult to maintain.

It is a challenging political task to lead today's world (and its many mini worlds) into the future. This task needs urgently support through interdisciplinary research into the possible futures. This is not only a challenge for OR; it is as well a fascinating field for scientific investigation for generations of Operational Researchers.

Heiner Müller-Merbach
President of IFORS