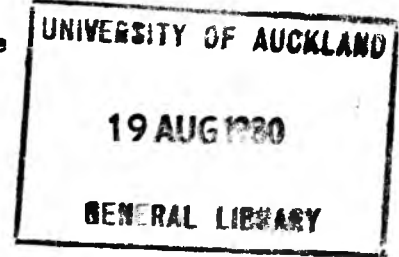




NEWSLETTER

Operational Research Society of New Zealand (Inc.)

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



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F2 11 Clouston Park Road,
UPPER HUTT.

July 1980

conference



CONFERENCE

28-29 August 1980
Auckland University

Auckland Professors to be the centre of OR "with the sleeves rolled up". So those of you in Christchurch throw away your text books - from Wellington forget your Government Department mentality and join us on the 28th to see what OR is really all about.

work wanted

POST GRAD STUDENT with 2 years OR work experience seeks an OR job from October 1980. Replies to:

John Hayes,
OR Department,
University of Lancaster,
Lancaster,
UNITED KINGDOM.

ARTICLE COMPETITION

Yes folks its all over - another great OR society presentation. What imagination - what style - what finesse. Its moments like these which make me proud to be the editor of such an august, powerful society's newsletter. The society has reached new heights, is conquering new frontiers - united we stand and **UNITY IS STRENGTH.**

After sifting through the **ENTRY** our judges made the astonishing decision to make everybody a winner. I was going to announce the winner of the \$25 but I couldn't be stuffed.

WORK AVAILABLE

WORK AVAILABLE

B.P. New Zealand has a vacancy in its O.R. Section for an O.R. Analyst. Previous experience is desirable as is an interest in practicable applications.

The Section is based in the Company's H.O. and, as part of the Development Planning Department, has the ear of top management. For the right person salary will not be a problem and the Company can offer a wealth of subsequent career opportunities.

If you are interested and want further details contact:

Mike Cox,
O.R. Officer,
BP NZ Ltd,
P.O. Box 892,
Wellington Ph. 729-729

FROM THE TREASURER

Most of the ORSNZ subscriptions for the year ending 30 September 1980 have now been received. Late subscribers risk being suspended from our mailing lists. However, don't make extra work for me. Post your cheque in today.

May I remind members about to change their job, their address or their Prime Minister to notify me beforehand by writing to:

Applied Maths Division, DSIR,
P.O. Box 1335,
WELLINGTON.

Otherwise your journals, abstracts and newsletters will be returned to us, or worse still, disappear forever. If you know where Messrs C.J. Kirkham or D.F. Rendall, both of Auckland, or Ms Sally Wong of Wellington can be contacted, would you kindly let me know. Thanks.

Bruce Benseman.



BOOK REVIEW

REVIEW OF PLANNING UNDER UNCERTAINTY

1. THE INFLEXIBILITY OF METHODOLOGIES, IN THE MARCH 1980 ISSUE OF THE JOURNAL OF THE OR SOCIETY.

In this article on planning under uncertainty, Jonathon Rosenhead has formulated the hypothesis that a major failing of planning is its lack of flexibility and the source of this inflexibility at least partly lies in the planning methodology of which the optimising techniques of operations research are an integral part.

Rosenhead argues that the planning process has failed to produce plans which can respond flexibly to changed circumstances

and in particular the principal planning methodology, rational comprehensive planning, is singularly unsuccessful at providing this flexibility. Since operations research falls within the rational comprehensive paradigm then, Rosenhead claims, "the available techniques together with the predominant practice are at variance with its frequent exhortations to achieve flexibility in planning." This leads Rosenhead onto the conclusion that a new methodology is needed, that should be non-optimising and based upon establishing a set of feasible solutions that keep future options open.

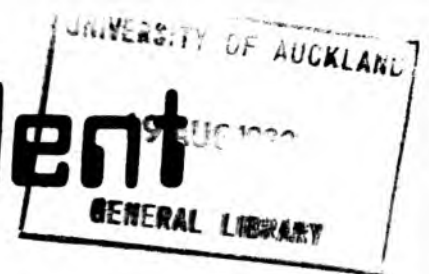
This generalisation is no doubt admirable in circumstances where the organization is unable to control key influences affecting its future and thereby can gain considerable advantage by keeping its options open. Even in these circumstances operations research has an important role to play in evaluating the feasibility of strategies and the consequences future uncertainties will have on the respective alternatives. This is an important link in the channel of upward communication that Rosenhead sees as being so important in the development of flexible plans.

However the goal of the planning process must remain the development of strategies that will enable the organization to best use their resources to reach their desired performance standards. By understanding their environment and the uncertainty that is inherent in it, the organization is in a position to develop strategies that will enable it to reach its desired goals. That is, its strategies will be developed to push it to the goals it wishes to achieve rather than being pulled by forces in the environment. Here the optimisation techniques of operations research can perform their traditional role of finding the best strategy.

While planning in an uncertain environment requires the flexibility to keep options open the organization must still seek strategies which are not dependent on such uncertainty if it is to reach its desired goals. Operations research has key roles to play in both situations in the development and evaluation of the strategies.

O. Evans
11 June 1980

from the President



A RISK PRONE STRATEGY?

The government appears to be opting for big, spectacular, but risky development projects, as we enter the eighties. We hear of the massive amounts of electricity that are to be sold cheaply to aluminium companies, to generate downstream wealth, but few jobs. There are methanol and Mobil gasoline plants in the offing, not to mention a refinery extension, pulp and paper mills and an enlarged steel mill, all presumably, to be financed with little effort out of recycled OPEC petrodollars. We are going to round this out by becoming a world tourist mecca, on the basis of our so far unspoiled scenic beauty, and Air New Zealand is gearing up to buy ten new Boeing 747's to bring it about.

It won't all be easy going though, before we reach the claimed era of super affluence. There'll be a need to increase local taxes and energy charges, to raise the subsidies for those lucky groups selected by government to spearhead our restructuring. We might even have to burn OPEC oil in the Marsden B power station at 7c/unit, so the aluminium smelters can have an uninterrupted supply at only 1-2cents/unit and as the bulk of the petroleum import substitution won't be on stream at least until 1985, our increasing oil import bill may well bankrupt us before the supposed good times arrive.

But, neglecting these important points, what of the riskiness of the strategy of big is beautiful? Particularly, what is the risk for the industries Mobil gasoline, aluminium and tourism. Should government put alot of eggs in each of these baskets, and go for broke, or should it be more canny? Its all right if the gamble pays off, but what if it doesn't?

What of mobil gasoline? It is a commercially unproven process, and our plant will be the first in the world. Perhaps equally alarming, the development is a very large one, and will require construction of a dual methanol plant larger than any currently operating. This probably wont be built by Mobil. With all due respect for Mobil's justly regarded petroleum engineering expertise, there still seems considerable chance of delay to one or other of these processes.

Why can't we build the first half of the plant first, and halve our risk, while perhaps gaining earlier production should the process work as well as hoped? And if there are delays, who pays? Does Mobil find us alternative gasoline at the contract price, or does the motorist and taxpayer fork out again?

Secondly, aluminium. It is a commodity that suffers from periodic glut and shortfall. That it currently happens to be in short supply, because of North American drought, and Japanese smelter closure, shouldn't blind us to the fact that in the past, its normal market state has been glut. The five new smelters being built in Australia, and the low electricity price Australian governments appear obliged to ask, points to future glut. And New Zealand's isolation from world markets, and lack of alumina doesn't strengthen our position. Tasmania depends now on aluminium for a similar proportion of its export income to that which would, should our second smelter go ahead. Is Tasmania booming now? If a second smelter goes ahead, we would be supplying one twentieth of current world demand, and a very small proportion of this would be for our own use. Our economy would be vulnerable to fluctuations in the world aluminium price. Again, in dry rainfall years, will a smelter cut back its electricity use, to take pressure off the country's more expensive thermal generation? Right now we don't know.

Finally tourism. Again a very cyclical industry, very dependent on the state of other Western economics. It has low utilisation of accommodation because of its seasonal nature, and we are separated from major markets (apart from Australia) by a hemisphere of water. Most modellers accept tourists usually go to nearer, rather than further destinations, simply because of price and travel time. With fuel costs likely to escalate, this too seems a risky industry to be relying heavily on.



FROM THE PRESIDENT **CONT.**

One must take one's hat off to the lobbyists who have persuaded this government to "think big", and favour the above three industries so royally. However, that admiration should not blind us to the likely outcome of this big thinking, namely a depressed economy. Perhaps it is not too late to whisper the concepts of hedging, of portfolio analysis, and of risk aversion, down the corridors of power. Restructuring, with the narrow portfolio of the above industries, and no measures to reduce risk, is not boldness, it is foolhardiness, and it is the ordinary citizen who will pay the price.

In the past, we have often had risk adverse strategies, and they have sometimes paid off well. Air New Zealand bought DC10's in the early searches at a hire when the larger B747's were available, bought by Quantas for instance. We were highly profitable then, because the planes were the right size for our route traffic but Quantas made losses because of over-capacity. The recent government decision to favour a smaller methanol plant, too, shows a risk adverse stance over future markets.

Consequently, for our own self interest, we must demand government be more open in explaining to the electorate how it intends to hedge against the very major risks in these three industries. Without such explanation it will not have the country's confidence or trust.

Dr Hugh Barr
PRESIDENT.

FOR AVERAGE CLODS

Seen recently in Management Science

"Advocacy and Objectivity in Science"
by J. Scott Armstrong (Vol 25 P. 423-428).

Three strategies for scientific research in management are examined: advocacy, induction, and multiple hypotheses i.e. no initial hypothesis, but careful and explicit observation. Advocacy of a single dominant hypothesis is efficient, but biased. Induction is not biased, but it is inefficient. The multiple hypotheses strategy seems to be both efficient and unbiased. Despite its apparent lack of objectivity, most management scientists use advocacy. For example, 2/3 of the papers published in a sampling of issues of Management Science (1955-1976) used advocacy. A review of the published empirical evidence indicates that advocacy reduces the objectivity of the scientists. No evidence was found to suggest that this lack of objectivity could be overcome by a "marketplace for ideas" (i.e., publication for peer review). It is recommended that the method of multiple hypotheses be used.