

OR NEWSLETTER

Operational Research Society of New Zealand (Inc.), PO Box 6544, Wellesley St, Auckland or PO Box 904, Wellington, New Zealand
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EDITORIAL

Hans G. Daellenbach, Department of Management, University of Canterbury, Christchurch NZ
h.daellenbach@mang.canterbury.ac.nz

I guess this will be my last editorial. Yes, I am giving up as editor of the OR Newsletter. I have done my stint. I changed it from a publication whose date of issue could be modelled by a Poisson process to a 'right on time, every time' publication, with Council recognizing it as an important component of our association. I heartily admit that on occasion I had my fun, stirring up a few people to grumble 'here he goes again', seeing several of the editorials reprinted in other places, and receiving fan mail from around the world. But it is time for somebody else to take over, keep it going and, hopefully, put new vigour into it. I have asked Council to look for a new editor.

So what should I talk about? The latest UK OR newsletter shows that the UK OR Society is well on its way to introducing a 'professional membership', governed by its own code of 'professional' conduct. The current proposal is a well thought-out balancing act to safeguard the 'ordinary members' and the 'professional members' against possible prejudicial action by the other group, while still maintaining a single society with common shared interests and benefits. Members would apply for professional status. Both categories would retain full voting rights on issues of common concern, but changes to the regulations and code of conduct for professional membership would be the prerogative of professional members only, provided such changes would not be prejudicial to the interests of the 'ordinary' members.

Should ORSNZ consider going down the same road? The usual arguments for professional membership are (a) minimum standards of technical training in the exercise of the profession, (b) minimum standards of the theoretical knowledge underlying the subject of the profession, and (c) a code of ethics governing the execution of professional work and advice. While many professions, such as lawyers, engineers, medical practitioners, have a fairly well-defined and commonly agreed-upon subject matter and preferred procedures and ways of 'implementing' them in practice, MS/OR is not a clearly defined subject, but a rather loose and often controversial conundrum of models, techniques, tools, approaches, ways of thinking, and traditional application areas (although the latter are rather fluid). Nor is there a commonly agreed-upon set of theoretical concepts, principles, and theories. In fact, anybody doing practical 'analytical thinking with a quantitative slant' — and even the quantitative slant is controversial with the advent of 'soft OR' — can claim "I am doing OR". We have not even been able to agree on an accepted MS/OR methodology, i.e. a set of steps that an OR project should go through, nor do I think it is even possible to come up with a

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Send submissions (in electronic Word or WordPerfect form, with no formatting) to: H. G. Daellenbach, Editor,

Department of Management, University of Canterbury, PB 4800, Christchurch, or preferably by e-mail:

h.daellenbach@mang.canterbury.ac.nz

methodology that covers all cases. On the other hand, many people in academic institutions we commonly call operations researchers, who have some of the theoretical knowledge, may have little training or know-how in doing practical OR, and hence can hardly claim to belong to the profession of operations researchers.

In contrast to other professions, the entry into operations research can be from all sorts of backgrounds and is often an accident. Furthermore, the mathematics of OR has become so vast, diverse, and complex that most operations researchers are only knowledgeable in a small fraction of (nor should knowledge of the mathematics of OR alone qualify for professional status). In fact, due to the continued expansion of the OR universe, the clear tendency is that the older the operations researcher gets, the smaller the fraction of the subject that he or she is competent in. Devising a flexible and at the same time meaningful set of professional entry regulations that do not automatically allow all comers to qualify is nigh impossible and will be rather arbitrary. And then there is the question of what criteria are used for regulating continued status as a professional member and what the mechanism should be for enforcing that.

An even bigger headache is given by what the rules and procedure for ethical conduct should be, and the mechanism for 'disciplining' member who are accused of breaching these rules. Again the parallel to other professions does not hold. Except for some vague general principles, there are no commonly accepted rules of how an OR project should be conducted. This would leave only the obvious case of gross dishonesty and blatant incompetence, but we hardly need professional rules do deal with them. Furthermore, censure by the society or withdrawal of professional membership will not prevent such people from continuing doing OR, unless there are legal sanctions by an act of Parliament that defines the OR profession and restricts its exercise to 'professional members'. Who would seriously want such a bane?

"But it would provide a degree of legitimacy, prestige and mana to professional members; it would be in the clients' interest to patronise only professional members," I hear. If I am any good in doing OR, I do not need that kind of promotion. Good work will do the promotion by itself. I do not need a 'nightmare' of an unworkable professional membership dinosaur to back me up. So only if I am no good at OR can professional membership offer me with a temporary and deceptive cloak of professionalism — however sooner or later the word will spread too — but at least I have the consolation that once I have professional membership it will be almost impossible to take it away from me again.

So I leave you in no doubt where I stand on this issue. I think professional status for operations research is unworkable. It is likely to give rise to strife and interminable delays in resolving disputes dealing with issues of entry or continued membership qualification and disciplinary matters. It exposes the society to potential lawsuits with members and liability claims by aggrieved users of OR, unless the rules are so vague and general that they become meaningless. Who needs that! Remember ORSA, now metamorphosed as INFORMS? It had a category of 'full member', offered to those who had distinguished themselves in the profession by doing creditable operations research for a certain time. Except for the first few years, most people were granted full membership on the basis of publications rather than doing real OR. The whole thing became somewhat of a farce. Fortunately, it was abandoned at no loss to the society!

James Corner proposes, over the course of three or four newsletter contributions, to discuss some aspects of teaching decision analysis. This first contribution sets the scene and discusses some motivational exercises he uses to get students interested in the general area of decision making. In subsequent issues, he plans to discuss other issues related to teaching decision analysis, such as teaching philosophy, cultural dimensions, and computer support. He promises to keep these contributions short! All of this discussion is planned to eventually congeal into a paper for Interfaces within the year. If you would like to share your own experiences, please do not hesitate to contact him. He hopes to hear from you.

TEACHING DECISION ANALYSIS

James L. Corner, Department of Management Systems, University of Waikato, Hamilton, NZ
jcorner@waikato.ac.nz

Introduction

Surveys of American universities repeatedly have shown decision analysis and related topics in probability theory to be enduring topics in education over the years in both undergraduate and graduate curricula, especially in MBA programs [Dyer, et al. 1993; Lane, Mansour, and Harpell 1993;

Strasser and Ozgur 1995]. The popularity of these techniques is underscored by the proliferation of specialty computer software for applying them [Buede 1996]. Outside of the United States, decision analysis continues to be popular in Europe, although relatively less so than in the States [Longbottom and Wade 1973; Pearman 1987; Jeffrey and Seaton 1995] but more than in Asian countries (see Pollock and Chen [1986] for problems with the application of decision analysis in China). In Australia and New Zealand (NZ), traditional operations research (OR) topics seem to find favour over decision analysis in curricula, judging by the offerings found in course catalogues. Furthermore, the OR Society of NZ's Annual Conference mostly disseminates research in applications of math programming which presumably reflects the teaching and research interests of the universities represented at the conference.

The relatively limited exposure of decision analysis in New Zealand curricula has motivated me, while trained in the US, to discuss my experience in teaching this topic in New Zealand over the past several years. This paper reports my experience in 1) starting up an undergraduate specialty course in decision analysis, 2) starting up a follow-up specialty graduate course, and 3) incorporating decision analysis topics into both the Executive and International MBA (EMBA and IMBA, respectively) programmes at the University of Waikato in Hamilton, NZ.

The reader may wonder what my experience has to offer others who teach decision analysis topics at these levels. The answer lies in at least three areas which form the main themes of this paper: in the general approach taken to motivate students toward the use of prescriptive (as opposed to descriptive) decision making techniques; in the approach to learning taken in the courses; and in how cultural dimensions are incorporated into the material. Many readers will have their own thoughts and meaningful experiences to share in these areas, and this paper does not intend to be definitive in any sense. It does, however, perhaps hope to expand traditional thinking about how decision analysis teaching is performed.

Motivating the Prescriptive with the Descriptive

The nature of the students I am exposed to is such that although they would like to be able to make better decisions, there remains an inherent scepticism toward prescriptive techniques. I have found that some motivation is needed and this is done through the exploration of descriptive decision making. In all my classes dealing with decision analysis, I devote the first several hours to this motivation. The regimen is as follows. I ask each student to think about an important decision problem which they have made recently, such as choosing a spouse, buying a car, or some important work-related decision. I then present them with a set of questions borrowed and adapted from Mintzberg, et al.'s [1976] study of strategic decision processes in order to structure their thinking. The questions are:

- What was the source of the initial stimulus?
- What did you do first? second? and so on.
- Were there any constraints or objectives? When were they established?
- Was there any uncertainty? How was it handled?
- How did alternatives become available?
- How did you settle on the chosen alternative?
- Was a structured process followed for solving the decision?
- What was important in the final choice?

Students then take turns sharing their decisions and we as a group look for commonalities across the set of decisions. Invariably, common themes emerge, which give rise to useful discussions, such as:

- 1) Most decision makers are alternative-focused, rather than value-focused (see the text by Keeney [1994] which discusses this issue), and they quickly can see the value of switching as I outline experiences in my own life.
- 2) Most of the information uncovered in their thought processes is ignored since they do not know what to do with it. Uncertainty is present but students quickly boil down what might have been probability distributions into a single best estimate. A quick review of Miller's [1956] discussion of the limits to human information processing lets students see the problems with this limitation and why it occurs.
- 3) All of the factors involved in most important decisions are quickly listed by the group to reveal a list similar to that identified by Keeney [1982]. This seeds two related discussions. The first is an attempt to define what quality is in decision making. While most students take the initial view that a quality decision is one in which a good outcome occurs, the discussion usually ends with students switching their belief to quality in decision making lying in the process. That is, quality occurs as all available and relevant information is considered in the

final choice. This leads to the next discussion as to how this might be done. With a little prompting from me, the need for a decomposed approach to the different facets of the process of decision making occurs.

- 4) It usually happens next that students wish to know if there are descriptive theories of decision making which might be explored for insight into how quality might be embedded into the decision process, although they generally already are aware of Simon's [1960] intelligence-design-choice theory. Naturally, I am armed with a sample of theories which are then reviewed and related back to the student's decisions as revealed earlier. Students nod their heads affirmatively as they relate the theories to their own decisions. These theories usually include the following: the Garbage Can Model [Cohen, March, and Olsen 1972], Mintzberg, Raisinghani, and Théorêt's [1976] original theory, Image Theory [Beach and Mitchell 1990; Mitchell and Beach 1990], Nutt's [1984; 1993] various theories, and the theory of Escalation of Commitment [Staw and Ross 1987]. (Lipshitz [1994] puts these and other theories into three general classes of descriptive decision making: Consequential Choice, Matching, and Reassessment. Further discussion of this relative to rational models of decision making is provided by Watson [1992].) Naturally, the undergraduate classes do not delve as deeply into the intricacies of these theories compared with the graduate classes, although everyone becomes further motivated as to the need for a prescriptive, decomposed approach.

These discussions collectively help to motivate students toward recognizing the need for (prescriptive) assistance when making decisions. The discussions typically are referred to during later portions of the course whenever students start to lose sight of the need for the more mathematical parts of their studies, for instance, when modelling uncertainty.

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AREA PROFILE IN STATISTICS

Prepared by Bryan F.J. Manly, Department of Mathematics and Statistics, University of Otago,
P.O. Box 56, Dunedin, NZ
bmanly@maths.otago.ac.nz

1. Introduction

In the classification for mathematical sciences that is being used for the MoRST analysis of New Zealand's scientific knowledge base Statistics is considered to include Statistical Modelling, Sampling Theory, Statistical Inference, Medical Statistics/Biostatistics, and Data Analysis and Statistical Computing. There is therefore a strong overlap with the area that is described as Probability and Stochastic Processes, which covers Probability Theory, Stochastic Processes and Time Series. Time series analysis, in particular, fits equally well in both categories, while statistical modelling is often based on models for stochastic processes.

Applications of statistics span virtually all areas of commerce, humanities, medicine and science. These applications often involve the development of new methodology, and are therefore statistical research. It is, however, very difficult to keep track of them because they are usually published in subject matter journals. For this reason it must be accepted that there will probably be some important research in applied statistics that has been carried out in New Zealand that is not covered in this profile. Nevertheless, some effort has been made to give an adequate representation of work in applied areas.

Much of the research in statistics in the last 20 years or so has been deeply influenced by the increasing availability of computer power. In 1979 Bradley Efron wrote a prophetic article called 'Computers and Statistics: Thinking the Unthinkable' in which he argued that statistical methods which would have been thought absurd in the 1950s because of the huge number of calculations involved would soon be common place (Efron, 1979). This has indeed occurred. For example, bootstrapping (which involves resampling an initial set of data and repeating an analysis thousands of times) has become a standard tool, and in recent times Bayesian statistics with calculations carried out using Monte Carlo Markov chain simulation has been attracting increasing interest (Besag et al., 1995). These developments are reflected in pure and applied statistical research in New Zealand, which has become extremely computer-intensive.

2. New Zealand's Knowledge Base

It is fair to say that the statisticians in New Zealand as a group work at the leading edge of the subject. There are many individuals with international reputations in their areas of expertise and the methods used by consultants in universities and crown research institutes generally represent the best in modern practice. An important factor in contributing to this state of affairs has been the regular visits to the country of leading statisticians from other parts of the world, and travel overseas by New Zealand statisticians to attend conferences and to collaborate with colleagues in other universities.

A number of research groups and individual researchers in New Zealand are making important contributions in both pure and applied statistics. Some areas worthy of particular note are included in the following list. Those marked with # have a distinctly New Zealand character, in part at least.

Agricultural Science#: Collaborative research in this area is carried out mainly by staff of crown research institutes (AgResearch, Crop and Foods and HortResearch) in support of projects on a wide variety of topics. Research in this area is also carried by individuals in several universities.

Archaeology: Research on methods for analysing mortuary remains and other types of archaeological data has been carried out at the University of Otago in collaboration with the Department of Anthropology's programme of research on prehistoric Thailand.

Bayesian Inference: There are groups of researchers at AgResearch, the University of Auckland and the University of Canterbury working on this topic.

Environmental Statistics#: Staff from AgResearch, the National Institute of Water and Atmospheric Research, the University of Auckland, and the University of Otago are developing methods for environmental monitoring, impact assessment based on tests of bio-equivalence, computer intensive methods, and graphics. A group in the National Institute of Water and Atmospheric Research also work on climate prediction.

Fisheries#: A group at the National Institute of Water and Atmospheric Research are working on problems related to stock assessment and the management of fisheries, while a group at the University of Otago are involved with statistical aspects of the monitoring and control of the by-catch of marine mammals and birds that occurs accidentally during fishing operations.

Forensic Science#: Work on statistical methods in this area is carried out at the University of Auckland.

Generalized Linear Models: Research in various aspects of the theory and application of these

models is carried out in many locations.

Industrial Statistics#: Group are working in this area at Massey University and the University of Waikato. Another group involves staff from Industrial Research Limited and HortResearch. This research involves the development of statistical methods for quality improvement, including process control, the design of experiments, improved estimation from non-standard samples. The Industrial Research Limited/HortResearch group is also working on applications to electrical engineering problems.

Marketing#: Research on statistics in marketing research has been conducted at the University of Auckland.

Multivariate Analysis: Massey University has a group working in this area, particularly on methods for discriminant analysis.

Production of Statistical Software#: this activity is carried out at many of the crown research institutes and universities. Massey University staff have developed software for teaching statistics.

Reliability Theory: Individuals at Massey University and Victoria University are working on reliability modelling and other aspects of reliability theory.

Samples and Surveys#: Staff working for Statistics New Zealand are involved in research related to improved sample designs for surveys, small area estimation, maintaining the confidentiality of records from individuals, and other matters related to government statistics.

Seismology#: a group involving staff from Industrial Research Limited, Massey University and Victoria University are working in this area, including the development of models for quantifying earthquake hazards based on precursory information.

Statistical Ecology#: Several individual researchers and research groups work on methods for estimating wildlife population parameters and studying community ecology at AgResearch, Landcare, the University of Auckland, Victoria University, the University of Canterbury, and the University of Otago.

Statistical Genetics#: AgResearch has an active programme in the development of statistical methods related to animal genetics and linkage studies while some staff at the Universities of Auckland and Otago are involved with similar methods for human genetics. Much of this research has distinctly New Zealand characteristics.

Survey Design and Analysis: a research group at the University of Auckland has developed methods for analysing survey data collected with complex sampling designs, and investigated the properties of adaptive sampling methods.

3. New Zealand's Capability

Table 1 is likely to be incomplete, but it should be a reasonable guide to the employment situation in New Zealand at the present time. It shows that there are about 170 individuals employed in crown research institutes, government departments, and universities who are likely to be involved in research for at least a part of their time. There are also a small number of statisticians who work as private consultants that may do some research at times. It is important to realize in this connection that in statistics it is often difficult to decide whether a particular task is applied 'research' or routine consulting.

Table 1: Approximate numbers employed in crown research institutes, government departments, and universities who are (or may be) engaged in statistical research for at least part of their time.

<i>Institute</i>	<i>Researchers</i>	<i>Totals</i>	<i>Institute</i>	<i>Researchers</i>	<i>Totals</i>
<i>Crown Research Institutes</i>			<i>Government Departments</i>		
AgResearch		14	Ministry of Agriculture	3	
Crop and Foods	4		Statistics New Zealand	25	28
Dairying Research Corporation	1		<i>Universities</i>		
Dairy Research Institute	2		Auckland	20	
FRI	5		Waikato	8	
HortResearch		8	Massey	20	
IGNS	1		Victoria	11	
IRL	3		Canterbury	5	
Landcare	1		Lincoln	5	
NIWA	20		Otago	7	76
NZ Dairy Board	4	63			
			Overall total		167

There are currently about 70 students working on graduate degrees in statistics (including honours degrees) in departments of statistics, or mathematics and statistics, of which about 20 are doing PhD degrees. The number of students working on higher degrees in areas closely related to statistics (e.g. those working for a PhD in econometrics in an economics department) is not known.

Although these numbers studying statistics seem quite reasonable, some evidence is accumulating which suggests that there is a shortage of young New Zealanders with the background that is necessary for either theoretical or applied research in statistics. For instance:

It is generally necessary to recruit university academic staff in statistics from overseas.

At a New Zealand Vice-Chancellors' Subject Conference in Statistics held in June 1996 concern was expressed by delegates about the small number of students who are studying statistics to the level that is necessary as a basis for research.

At the same subject conference, a representative from Statistics New Zealand noted that there is a great deal of difficulty in recruiting graduates who have the knowledge and ability to develop new methodology, as is required in the operation of their business from time to time.

Graduates in statistics appear to obtain employment quite easily.

Consequently, it seems to be a fair assessment of the present situation that there is some shortage of personnel capable of statistical research, which is being overcome at the highest levels by recruitment from overseas. Of more concern is the lack of students being trained at a level that enables them to carry out research at the operational level that is needed by some businesses and government departments.

4. Opportunities

It is interesting that statistics staff at all New Zealand universities are appreciating the potential for greater interaction in teaching and research with staff in other subjects. Those who have been most involved in collaborative research are particularly well aware of the benefits that can result from joint research projects. Furthermore, these benefits may be greater in non-traditional areas. There is also a realization of the advantages of greater collaboration with crown research institutes, government departments, business, and industry.

There is, however, widespread concern that because of its interdisciplinary nature statistical research is not well catered for in terms of public support. The Marsden Fund does, of course, cover statistics within the Mathematical and Information Sciences category. This provides a welcome avenue for grants for 'pure' research. Unfortunately, the categories for the Public Good Science Fund (PGFS) have been set on industry based science outputs which appear both in principle and reality to be biased against bids in the mathematical sciences in general, and statistics in particular, where the benefits are generic rather than specific to one industry. Therefore what might otherwise be an obvious source of funding for applied statistics research does not provide this except to a small extent. Furthermore, statisticians in crown research institutes are usually included in bids in support of outputs that are not in the mathematical sciences area.

5. Conclusion

At present a wide range of high quality pure and applied research in Statistics is being carried out in New Zealand, and the knowledge base must be considered to be quite good for a country of this size. There are, however, two concerns in the statistical community about the situation in future:

- The number of students studying statistics to the level necessary for research may not be sufficient to meet the demand.
- There is a lack of public support for generic statistical research that can be expected to be of benefit in a wide range of applications rather than to a specific industry problem.

Helpful comments on this area profile at various stages of development were received from Dick Brooks (Massey University), Neil Cox (AgResearch), Chris Francis (NIWA), Harold Henderson (AgResearch), Peter Johnstone (AgResearch), David Rhoades (IGNS), Chris Wild (University of Auckland) and Xiaogu Zheng (NIWA).

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BRANCH GOSSIP COLUMN

No Massey Mutterings

John Giffin has gone into hibernation!

No Symonds Street Stories

Finding a feasible solution within negative time for the rostering problem seems to be more elusive than expected. Although Auckland is able to solve problems with thousands of tasks and hundreds of well-paid airline staff, the problem of assigning one of five or six candidates as correspondent for the Newsletter seems to be a very hard nut and quasi-incrackable!

Research in OR at Waikato — University of Waikato

Les Foulds, Department of Management Systems, University of Waikato
lfoulds@waikato.ac.nz

Les is working with Klaus Neumann of Karlsruhe, Germany, on the problems. Klaus is well known to NZ OR people, having visited various OR groups here in 1987 and 1995

Resource-constrained Project Scheduling

As the pace in which technology, products, and markets are changing, rapid change is also occurring throughout all phases of production. When forecasting of demand is likely to be inaccurate it is vital that manufacturers manage their production projects as well as possible. For this reason there is significant interest in project scheduling by both practitioners and researchers alike. The prototypical objective in project scheduling usually involves the minimization of project duration (makespan), while constraints are typically placed on resources, and minimal time lags between different activities are also introduced. Practical applications, however, typically are of sufficient complexity that optimization solution methods are unmanageable. Approximate methods thus have been developed to address such problems. In addition, other extensions to the basic models have been considered in an effort to make such modeling more realistic. These extensions are characterised by the addition of resource leveling and the consideration of additional resource constraints such as maximal (as well as minimal) time lags, along with extensions addressing stochastic issues. In this project we shall focus on the scheduling of projects which are subject to both constrained resource allocation and the existence of minimal and maximal time lags between different activities. We plan to consider two types of objective functions, both to be minimized:

- (a) project duration (makespan) and
- (b) measures of the variation of the consumption of resources (resource leveling).

We shall then develop and discuss approximate methods for both types of objectives, and investigate two scenarios of make-to-order production in which these methods can be applied. The first involves prescribed customer orders firm delivery dates, and limited machine capacity. We shall then attempt to devise a model of the question of finding an optimal machine schedule as a resource-constrained project scheduling problem. The second scenario concerns a capacity-oriented hierarchical approach. The planning stages of capacitated master production scheduling, multi-level lot sizing, temporal and capacity planning, and shop-floor scheduling will all be considered. Once again, we plan to model some optimization problems that arise as various resource-constrained project scheduling problems.

No Wellington Branch News

They are busy keeping up with Beehive scandal. The rumour goes that Tuku Morgan promised to model his boxer shorts. Fertile ground for Drama Theory!

Mainland News

Hans Daellenbach, Department of Management, University of Canterbury, Christchurch NZ
h.daellenbach@mang.canterbury.ac.nz

Ross James is trying hard to have us update our personal WEB pages. I tried to find a more flattering photograph, but could only find some when I was still young and smashing! Don will be on leave until this time next year in Providence, R.I., just a two-hour drive from New York — the lucky fellow. He promised to send us reviews of the latest musicals that have some relevance to management science.

We had Prof. Michael Jackson — yes, the famous TSI developer, not the singer, you dummy — from the University of Lincolnshire and Humberside as an Erskine visitor. The number of staff members at his seminars matched the number of students. Using interesting case studies, he took us through parts of Creative Problem Solving: Total Systems Intervention, the text he jointly

authored with R. Flood and which proves to be still selling strongly. (I recommend it highly — next to my own text a must for any well-balanced and fully integrated management scientist!) At the end, the staff got a chance to play various roles in a firm to be interviewed by the students. We were even allowed to be nasty to each other. Man (or should I say 'Person' to demonstrate my genre correctness?), am I glad to be in academe!

Dr Andrew Tobias, from Birmingham, who, as Ross reported in December, had accepted the vacant position in production and manufacturing at our department, in the end changed his mind. I can fully sympathize with him that living so close to the homely Cotswolds, with its lovely Pubs, would be a poor exchange for Christchurch. We hired Piet Beukman, an engineer who has been associated with our department for three years already. He brings a wealth of practical experience to our group. His immediate current interest is in 'backwards manufacturing', or what we more naive people would call recycling, for which he has a huge research grant.

ORSNZ COUNCIL NEWS

Andrew B. Philpott, Department of Engineering Science, University of Auckland, Auckland NZ
a.philpott@auckland.ac.nz

Introduction

There have been no Council meetings held since January 29th, the minutes of which were reported in the March Newsletter. There will be a Council meeting called for early July to address some of the issues raised below. The purpose of this brief communication is to report on the progress on the initiatives mentioned in the minutes of the last Council meeting.

Documenting OR library Holdings

We propose to establish links from the ORSNZ Web page to lists of OR journals held at all institutional libraries in New Zealand. These links already exist to lists of OR Serials at Canterbury and Massey Universities, thanks to the efforts of Ross James and Mahyar Amouzegar, and a list is under preparation for Auckland University. We would like the other universities, CRIs, and corporate members to participate as well to increase the value of this information resource.

ORSNZ Visiting Lecturer

A number of expressions of interest have been made regarding this fund. We shall be determining disbursements from it at the Council meeting in July, so the Council would like to receive proposals before June 30, as outlined in the November 1996 Newsletter.

Web Seminar by Professor James Ho

Professor James Ho is currently visiting Canterbury University on an Erskine Fellowship in the Department of Accounting, Finance, and Information Systems. The ORSNZ is a joint organizer of the seminar "Internet Strategies" being conducted by Professor James Ho in Auckland on June 27th (see enclosed flyer). This is excellent publicity for the ORSNZ and we are grateful to Jim Ho for agreeing to conduct this seminar.

Student Participation at APORS

The Council has received a number of queries from students intending to present papers at APORS 97 and seeking financial assistance from ORSNZ. The Society has a small amount of money for this purpose. Students who are presenting a paper at the conference should write a letter to the Council applying for financial assistance.

The Council will then make an allocation of funds at its next meeting in July.

APORS'97 UPDATE

Vicky Mabin, Management Group, Victoria University
Vicky.Mabin@vuw.ac.nz

"Only 198 days to go!" So said the APORS'97 WEB page when I visited it today, though by the time you get this, it'll be more like 170 days.

The organisers, Moshe Sniedovich and Paul Lochert and their team, have been hard at work, sorting through the bumper crop of 420 or so abstracts. Stream organisers have been co-ordinating the papers in their streams, and the next mail-out is in preparation. The list of abstracts is available on the web, and it is pleasing to see a large number of NZ authors in the list.

The list of invited streams has been published on the web too, and it is very pleasing to see the diversity of streams. I also noted with interest that 7 of these have NZ organisers. Well done, team!

The next mail-out should be sent out in June (?), with confirmations of papers accepted, and further details about the conference itself. I can recommend you visit the web site:

<http://www.maths.mu.oz.au/~worms/apors/apors.html>
for the most up to date information.

Looking forward to seeing you there in Melbourne: If you haven't already marked it in your diary, remember those dates: 30 November - 4 December. If you have any questions or comments, please send them to me or direct to the conference organisers.

STUDENT GRANTS FOR APORS 97

The Council of ORSNZ has agreed that ORSNZ will provide a limited amount of financial aid to assist students to attend APORS 97. This will be available only to students presenting papers at the conference. Students seeking financial assistance should write a letter to the Council (at the address below) applying for a grant in aid. This application should be accompanied by a statement signed by their research supervisor or lecturer indicating

what qualification they are enrolled for. Preference in allocating funds will be given to full-time students, but part-time students are also encouraged to apply.

Applications close on June 30th, 1997, with

Andy Philpott, President, ORSNZ

Department of Engineering Science, University of Auckland, Private Bag 92019, Auckland

SEEN/HEARD ELSEWHERE

"Why did the chicken cross the road?"

Plato: For the greater good.

Karl Marx: It was a historical inevitability.

Oliver North: National Security was at stake.

Carl Jung: The confluence of events in the cultural gestalt necessitated that individual chickens cross roads at this historical juncture, and therefore synchronicously brought such occurrences into being.

Ludwig Wittgenstein: The possibility of "crossing" was encoded into the objects "chicken" and "road," and circumstances came into being which caused the actualization of this potential occurrence.

Albert Einstein: Whether the chicken crossed the road or the road crossed the chicken depends upon your frame of reference.

Buddha: If you ask this question, you deny your own chicken-nature.

The Sphinx: You tell me.

Captain James T. Kirk: To boldly go where no chicken has gone before.

Andersen Consultant: Deregulation of the chicken's side of the road was threatening its dominant market position. The chicken was faced with significant challenges to create and develop the competencies required for the newly competitive market. Andersen Consulting, in a partnering relationship with the client, helped the chicken by rethinking its physical distribution strategy and implementation processes. Using the Poultry Integration Model (PIM) Andersen helped the chicken use its skills, methodologies, knowledge capital and experiences to align the chicken's people, processes and technology in support of its overall strategy within a Program Management framework. Andersen Consulting convened a diverse cross-spectrum of road analysts and best chickens along with Andersen consultants with deep skills in the transportation industry to engage in a two-day itinerary of meetings in order to leverage their personal knowledge capital, both tacit and explicit, and to enable them to synergize with each other in order to achieve the implicit goals of delivering and successfully architecting and implementing an enterprise-wide value framework across the continuum of poultry cross-median processes. The meeting was held in a park-like setting, enabling and creating an impactful environment which was strategically based, industry-focused, and built upon a consistent, clear, and unified market message and aligned with the chicken's mission, vision, and core values. This was conducive towards the creation of a total business integration solution. Andersen Consulting helped the chicken change to become more successful.

And now for a somewhat different e-mail inquiry to the Canterbury OR group:

Hi, My name is waseem aslam and I want to be a Fashion Model, i saw your web sites they were great, so thats why i am WRITING you what can i do, how could you help me to be a MODEL waitin for your mail

THAMKZ

NAME : WASEEM ASLAM

FATHER'S NAME : M ASLAM

ADDRESS : WASEEM ASLAM

12.UNI-PLAZA,GROUND FLOOR
I.I.CHUNDRIGAR ROAD
KARACHI,
PAKISTAN.
E.MAIL : azeema@paknet3.ptc.pk
AGE : OCTOBER.20.1976
SEX : MALE
HEIGHT : 5.9
WAIST : 31
CHEST : 43
WEIGHT : 69 kg
COMPLECTION : FAIR
EXPERIENCE : modelling in a fashion show & modelling for commercials
HOBBIES : sleeping, movies, computer hardware
EDUCATION : graduation, computer Hardware specialist
Is somebody pulling our leg?

Principles of OR

Some of you oldies might remember Robert Machol's 'Principles of OR', published originally in OR/SA Today and later continued in Interfaces in the mid 70s. I (the editor) shared his banquet table at the Vancouver IFORS Conference last year and reminded him of them. I suggested that, now that he was retired, he should have ample time to give us some more of those nice little gems. "An interesting thought!" he responded, and by the end of the banquet he came over to me and reported another one that just occurred to him when he ate the rather vinegary salad. It has now been published in the December 1996 issue of MS/OR Today (page 12), called the Vinegary Solution.

For those of you were still running around in diapers in the early 70s, here is the list of those that appeared in Interfaces and MS/OR Today:

6. The Screwdriver Syndrome, Interfaces March 1974, p.26/7
7. The Optimum Optimorum, Interfaces August 1974, p.52/3
8. The Burns Balance, Interfaces Nov. 1974, p.63/4
9. The Hawthorne Effect, Interfaces Feb. 1975, p.31/2
10. The Titanic Coincidence, Interfaces May 1975, p.53/4
11. Gresham's Law, Interfaces August 1975, p.33/4
12. Finale, Interfaces Nov. 1975, p.25/6
13. Vinegary Solution, MS/OR Today Dec. 1986, p.12

They are entertaining and of enduring relevance!

GRADUATE RESEARCH IN INDUSTRY FELLOWSHIP

Optimizing telecommunications technology decisions

Supervisors: Dr A. B. Philpott, Dr A. Mason, University of Auckland

Sponsors: FRST

Contractors: Telecom NZ Ltd. and University of Auckland

Value: \$18,943

Duration: 16 months

The University of Auckland and Telecom NZ Ltd. are seeking applicants for the above Fellowship, which will be used to support a student working towards a Master's degree in Engineering at the University of Auckland. The desired outcome of the project is to produce a suite of software tools for determining the optimal choice of technology for provisioning telecommunications networks. The basic problem for a given network is to choose a technology for each node and line which is compatible with its neighbours, and which gives the least cost. For tree networks this problem can be addressed using dynamic programming. When the future expansion of the capacity of the network is taken into account, this problem becomes more challenging. It is intended that the software produced by this project will provide near optimal capital provisioning rules for use by Telecom NZ.

We seek a candidate with a good honours degree in either Engineering, Mathematics or Computer Science, with some experience of optimization and competency in programming in C or Fortran.

Prospective applicants should send:

- (1) a letter applying for the Fellowship;
- (2) a copy of a recent curriculum vitae, including 1996/97 examination results if applicable;
- (3) the name and telephone number/E-mail address of an academic referee to:

Associate Professor A.B. Philpott, Department of Engineering Science, University of Auckland,

Private Bag 92019, Auckland
so as to reach him before June 30, 1997.
More information can be obtained by e-mailing a.philpott@auckland.ac.nz, or looking at:
<http://www.esc.auckland.ac.nz/People/Staff/Philpott/GRIF.html>

MEETINGS CALENDAR

FIFTH JOINT MEETING OF THE AUSTRALIAN AND NZ MATHEMATICS SOCIETIES

5-11 July 1997
University of Auckland
For details see <http://www.cce.auckland.ac.nz/math/>
Note: students may still submit paper abstracts to David McIntyre (mcintyre@math.auckland.ac.nz) by 15/6/97.

SYMPOSIUM ON OR 97

3-5 September 1997
Friedrich Schiller University, Jena, Germany
For details see <http://www.wivi.uni-jena.de/sor97.html/>

OR 39 CONFERENCE OF THE UK OR SOCIETY

9-11 September 1997
Bath Spa, England
For details, e-mail: barrett@orsoc.org.uk

THE SWISS OR SOCIETY (SVOR/ASRO) 5th AUTUMN TUTORIAL

22-23 September 1997
Telecommunications in the 21st Century: A challenge for OR Methodologies
Hotel Seepark, Seestrasse 47, CH 3602 Thun, Switzerland
Contact: Dr. Heinz Schiltknecht
e-mail: hschilt@dial.eunet.ch

AUSTRALIAN WORKSHOP ON INTELLIGENT DECISION SUPPORT

October, 3 1997
Melbourne
Preliminary Call for Papers. workshop details, important dates and EXPRESSION OF INTEREST form can be accessed through the WWW: <http://isnotes.is.monash.edu.au/AWIDS.nsf>

INFORMS Dallas Fall 1997 Meeting

26-29 October 1997
Hyatt Regency, Dallas, Texas
Paul Jensen, University of Texas, Dept. of Mech. Eng., 62200, Austin, TX 78712

INT. CONF. ON OR AND MANAGEMENT SCIENCE: ICORMS - ICORD 1997

25-28 November 1997
Manila Mandarin Hotel, Metro Manila, Philippines
Contact: Dr Elvira A. Zamora, College of Bus.Ad., Univ. of the Philippines, Diliman, Quezon City 1101
e-mail: elvira@mnl.sequel.net

APORS '97 C The Fourth Conference of the Association of Asian-Pacific OR Societies within IFORS

Nov 30 - Dec 4 1997
Theme: "Coexistence Between Human, Natural & Technological Resources"
World Congress Centre, Melbourne, Victoria, Australia
For more details, see <http://www.maths.mu.oz.au/~worms/apors/apors.html>
e-mail: APORS97@sci.monash.edu.au

INFORMS/CORS Montreal Spring 1998 Meeting

26 - 29 April 1998
Queen Elizabeth Bonaventure Hilton, Montreal, Canada
General Chair: Paul Mireault, École des Hautes Études Commerciales, 5255 Avenue Decelles, Montreal, Quebec
e-mail: Paul.Mireault@HEC.CA

INFORMS Israel International Meeting 1998

28 June - 1 July 1998
Chair: Jacob Hornik, Tel Aviv University, Recanati Grad. School of Mgt., Ramat Aviv 69978, Israel

INFORMS Seattle Fall 1998 Meeting

25-28 October 1998
Seattle, Washington
Chair: Marisa Altchuler, Boeing Computer Services, P.O.Box 24346 M/S 7A TH, Seattle WA 98124-0346

IFORS'99 Beijing

Early August 1999
If you want to be on the mailing list e-mail: ifors99@amath11.amt.ac.cn (Note 11 is eleven)

