NEWSLETTER

Operational Research Society of New Zealand (Inc.)

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March 1988

)ITORIAL

ıanks to everybody for all ıaterial. Keep it coming.

ave Whitaker

)NFERENCES

6-30 July 1988
Multiple Criteria Decision Aid Methods, Applications and Software. The 3rd International Summerschool, Portugal.

8-19 August 1988
24th Annual Conference Auckland.

2-26 August 1988
Fifth International Symposium on Inventories, Budapest.

2-24 August 1988
1st Conference of APORS Seoul, Korea.

POSITION WANTED

OR/MS Consultant

Experienced in minerals, petroleum, manufacturing and sales. BSc in Civil Engineering, MSc expected in June 1988.

Contact: Craig A Graham
c/o Dr G Woolsey
Colorado School of Mines
Golden, Colorado 80401
USA

MEMBERSHIP JOURNAL

We seem to have sent out fewer journals than there are members in February. Any member who has not received a copy of Asia Pacific J. of OR, Vol 4, No 2(Nov, 1987) shoul drop a note to

Professor H G Daellenbach
Economics and OR Dept.
University of Canterbury
Private Bag
Christchurch.

I.F.O.R.S.

INTERNATIONAL FEDERATION OF OPERATIONAL RESEARCH SOCIETIES

letter from the president

ur Branches of Systems Concepts

No. 21, November 1987.

stems concepts have found access to (almost) every discipline and have deeply influence
ny schools of thought. But to the surprise of many systems thinkers, there seem to be
uite a few barriers within the large systems community. There are many systems concepts
ound, partly quite different from one another.

me authors have tried to systematize the systems concepts. Most of such classifications
e based on gradual schemes, starting from the extreme reductionistic concept and leadi
(a one to three steps) to the extreme holistic concept. Those classifications provide
mpression as if the totality of systems concepts could be projected in one dimension, a
ontinuum. Certainly, it is a matter of interpretation, but there seem to be fundamental
ot only gradual differences between the main branches of systems concepts, as indicated
e following table:

Western			Eastern
Science	Humanities	Engineering	Philosophy

is suggested to distinguish between Western and Eastern concepts of systems thinking.
stern systems thinking is systematic, while Eastern systems traditions are systemic.
ree kinds of Western systems concepts shall be identified in contrast to each other:
cience, humanities, and engineering.

Western science is analytic in nature. It starts from any system under consideration
duces it to subsystems, subsubsystems, subsubsubsystems etc. The sought result of the
entific process is knowledge. The prevailing questions refer to cause-effect relation
The characteristic systems thinking of the Western humanities may be understood as
nthetic. Subsystems are being considered, and it is asked how they can be coordinated
rposeful systems. The aim of the endeavours is understanding. The central questions ha
do with finality, i.e. means-end relations.
Western engineering can be understood as a combination of both, analysis and synthesi
e. design of systems, in particular man-machine systems. Some may emphasize technical
pects, while others may concentrate on organisational and behavioural aspects. Enginee
y use so much analysis and so much synthesis as they require for their design task.
eir thinking is pragmatic, neither causal nor final, only.

stern science, humanities and engineering together build an efficiently functioning
ulture. But each of them as well as their totality are in fundamental contrast to Easte
ilosophy. The Eastern method is neither based on analysis nor on synthesis nor on desi
stead, it is based on meditation. The aim of meditation is deep individual insight int
stem and personal identification with it. Its characteristic thinking is neither causa
final nor pragmatic, but holistic.

the four branches of systems concepts have their own benefits. None is superior or
ferior to any other. Nobody will reach full expertness in anyone of the four branches
stems concepts, let alone expertness in all of them. Some may try to develop their
ilities in one of the branches, some may do so in more than one of them. Whatever eac
dividual chooses, it seems to be helpful if he at least acknowledged the existence of
ner branches. There are many nuances of the four branches of systems concepts, and th
le above is again the result of Western systematic thinking. Some may even completel
agree with this "Western" classification of systems concepts.

ner Müller-Merbach, Immediate Past President of IFORS

ORSNZ Membership Survey

Rona N. Bailey
Applied Mathematics Division, DSIR

This report outlines the results obtained from the ORSNZ membership survey carried out in June 1987. The response rate was approximately 60%.

Of respondents, 26% are employed by the universities, 22% are employed in the private sector, 20% are employed by government departments, 9% are self-employed, 7% are non-working and 15% are employed by other organisations, e.g. SOEs or local bodies.

The positions held by OR members can be described in so many different ways that it is not easy or useful to categorise them. More usefully, the primary tasks of respondents were described as consultant (17%), manager (14%), teacher (11%), teacher/researcher (10%), researcher (7%), student (6%), OR practitioner within firm (4%), some combination (20%) and other (11%).

34% of respondents spend more than 1/4 of their time developing new techniques, and only 12% spend more than 1/2 of their time developing new techniques.

The availability of most resources was described as "adequate". The exceptions were library facilities which were available "as much as required", and finance which was generally "limited".

79% of respondents are interested in attending branch meetings. This is a little surprising, as meeting attendances, in Wellington at least, are usually quite low (about 20% of members).

Most respondents were happy to have food provided at meetings at least some of the time. Lunch times and immediately after work appear to be the most popular meeting times. Any day of the week is suitable except for Friday night which is (not surprisingly) generally unpopular.

The suggested meeting types of local speakers, speakers from other NZ centres, overseas speakers and tutorials on selected OR techniques were popular. The only exception was the suggestion of workshops, probably due to confusion over what was meant by the term.

There was a wide range of suggested meeting topics including computing, applications and live projects and joint meetings. The more common suggestions were applications related or general rather than technical talks.

71% of respondents attend conferences sometimes or almost always. 21% stated that they never attend conferences. Unfortunately, they were not asked *why not?* Please write in and let us know!

A conference in a remote location could be considered. Most respondents had no preference as to when the conference is held. Of those that do, May and August were more favoured than June and July. Thus it would be possible to shift the conference to the May holidays if required.

Current projects of the respondents were categorised as Financial/Economics (14%), Manufacturing and Inventory Management (13%), Mathematical and

optimisation (11%), Production Planning (9%), Scheduling (8%), Energy (7%), Computing (5%), Simulation (4%), Corporate Planning (3%), Queueing (2%), Manpower Planning (1%) and other (47%).

Special interest areas of the respondents were categorised as Math Programming (25%), Statistics (11%), Simulation (10%), Computing (8%), Inventory Control/OPT (7%), Scheduling—all types (7%), Organisational behaviour (5%), Financial (4%), Facility Location (3%) and other (21%).

Increased funding was the most common suggestion given to counteract any limitations.

The most common suggestions as to what ORSNZ can do to help respondents in their job related to

- Publicity to outsiders
- Information to members

Suggestions relating to what the government can do to help respondents in their job were categorised as Recognise OR/research (13%), Industry incentives (12%), Other Funding (10%), Education funding (10%), Research funding (10%), Tax incentives (9%), Other education (8%), Salaries (7%), Personnel policy (7%) and other (15%). Funding related matters were the most common suggestions.

Summer Computer Simulation Conference

Find the Solutions in the Emerald City

Seattle Sheraton Hotel & Towers • Seattle, Washington
25-27 July 1988

Inf: SCS, The Summer Computer Simulation Conference, P.O.Box 17900, San Diego, CA 92117, USA.

The SCS

will take place on February 3-5, 1988 at the Town and Country Hotel, San Diego, California, USA.

INF: SCS, P.O.B. 17900 San Diego, CA 92117, USA.

The Conference will bring together the following individual conferences:

MODELING AND SIMULATION ON MICROCOMPUTERS
CONFERENCE ON POWER PLANT SIMULATION
AEROSPACE SIMULATION
SIMULATION AND ARTIFICIAL INTELLIGENCE
DISTRIBUTED SIMULATION
MAPCON IV (The 1988 Multiprocessors and Array Processors Conference topic is: "Performance Gains Using Special Processors ... And the Accompanying Problems".

OR and Company-Wide Quality Improvement

by

Tim Ball

(Talk presented to the Twenty-Forth Annual General Meeting of The OR Society, Tuesday 24 November, 1987. Wakefield House, Wellington)

Company-Wide Quality Improvement (CWQI) is a discipline which ensures that an organisation is continually maintaining and improving all its activities in order that the needs of its customers can effectively and economically be met. This concept extends beyond the traditional roles of the OR practitioner and the statistician. The former has been concerned primarily with developing methods to obtain better solutions to systems or management problems, while the latter has largely been concerned with quantifying the uncertainty and variation in measurements and data.

Tim Ball, drawing on his experiences at the Deming Institute, and the successful applications of CWQI in Japan, firstly, justified the need to implement CWQI in New Zealand companies, and secondly, examined the role of the OR practitioner in facilitating the development of CWQI.

The adoption of CWQI by companies entails:

(a) The establishment of a clear business philosophy of improving the quality of service and goods offered to customers.

(b) The continual study and improvement of methods used to produce goods and services.

(c) The encouragement of team work;

(d) The structuring of management to facilitate the achievement of items (a) to (c).

Tim said the adoption of CWQI by New Zealand companies would ensure that management continually seek out and address problems. Data should be collected and analysed on all aspects of the company's operations in order to identify the root cause of problems, and to aid the development of effective solution strategies. The effectiveness of any remedial measures should be monitored by further data collection and analysis. Management should also ensure that the breadth of knowledge available in all sections of the company was used to solve problems. This would be particularly important when outside consultants are employed as advisors.

The role of the OR consultant, Tim said, would be to assist companies implement CWQI. This meant that the OR consultant must assist management in problem identification. This aspect of OR consultancy has been neglected in the past in favour of developing sophisticated modelling techniques. Tim believed that unless the real problems are identified, the resulting models developed to solve problems would clearly not be useful, and could in the long term be detrimental to the image of the OR profession.

Tim was of the opinion that most of the problems that need to be solved in New Zealand companies were rather simple and did not require sophisticated OR techniques. However as companies develop CWQI concepts, their capacity to identify and solve problems on a more routine basis would increase thereby requiring a wider range of OR techniques.

Chris Darkey.

OPERATIONAL RESEARCH SOCIETY OF NEW ZEALAND

24th Annual Conference 1988

Call for Papers

Date: Thursday 18th and Friday 19th August

Venue: Auckland University

Papers: Papers are invited on all aspects of the theory and practice of Operational Research. Each paper will be allocated about thirty minutes. Please submit abstracts, before **30th April**, to:

ORSNZ Conference Secretary,
T.A.M. Department,
University of Auckland,
Private Bag,
Auckland.

We intend to publish papers in summary form (approximately four pages) prior to the conference. Summary papers will be required by **3rd June**; further details on the format will be sent to authors in May.

Students: Student papers are especially welcome. Student travel grants may be available—for details, contact the Conference Organisers.

Registration: Registration forms will be available from the Conference Organisers and will be sent to members in due course.

Enquiries to: Julie Falkner (09) 737-999 x 8387
Andy Philpott (09) 737-999 x 8394