



Newsletter

Operations Research Society of South Africa

Operasionele Navorsingsvereniging van Suid-Afrika



December 2007

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FROM THE EDITOR

Welcome to the final edition of the ORSSA newsletter 2007! I'm sure many of you are looking forward to the holiday season just around the corner, and as per usual there are probably a million and one things that need to be done before you can relax. However, if you are short of reading material for the upcoming holiday season, this issue of the ORSSA newsletter is sure to be an excellent read.

Basie Kok

Most of the content presented in this issue is dedicated to the outstanding members of our society who have truly given of themselves and their exceptional talents to produce lifelong contributions to the field of OR. These individuals were recognised for their achievements at the 2007 ORSSA conference in Cape Town and the various dissertations that were read out there have been published in this issue.

Also included this month, is a member profile of our incoming president, Sarma Yadavalli. He shares some inspiring words about his vision for ORSSA from 2008 onwards.

We conclude the year end newsletter with another outstanding book review by Hans Ittmann, where the fascinating work of George E. Kimball is discussed in his book *Methods of Operations Research*, originally published in 1951.

I hope you enjoy the issue!

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PMS 2008 ELEVENTH INTERNATIONAL WORKSHOP ON PROJECT MANAGEMENT AND SCHEDULING

**April 28 - 30, 2008 ISTANBUL (TURKEY)
EURO Working Group on Project Management and Scheduling**

<http://pms2008.boun.edu.tr/>

ABSTRACT SUBMISSION

Extended abstracts of not more than 4 single-spaced A4 pages written using font size 11 in either Microsoft Word or PDF format must be submitted electronically. Please check the conference web site for details. All abstracts submitted will undergo a peer review process, and abstracts accepted will be published in the workshop proceedings available at the workshop. The first name will be taken as the corresponding author unless otherwise requested.

IMPORTANT DATES

Deadline of submission for 4-page abstracts	November 26, 2007
Notification of acceptance	December 26, 2007
Deadline for final version of 4-page abstracts	January 21, 2008
Early registration deadline	February 15, 2008

Please note that at least one of the authors should be registered by the early registration deadline for the abstract to be published in the proceedings.

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FROM THE PRESIDENT'S DESK

by Marthi Harmse (marthi.harmse@sasol.com)

ORSSA President



Marthi Harmse

Dear ORSSA friends

Was it yesterday that I typed the first letter from the president's desk? Or the day before...how quickly time passes, especially if one does something so enjoyable and so close to one's heart. In the 2007 presidents report, published in this issue, I reflected on my term as president and would not want to repeat anything. I would, however, like to use this opportunity to thank all of the executive

committee members who will step down at the end of this year. Leo Tomé, thank you for taking the newsletter to where it never was before: first as editor and then motivating for and becoming the first business manager of the newsletter. Petrus Potgieter, thank you for continuously looking for new and better ways to invite online surfers into the portal of Operations Research in South Africa. Yvonne Fletcher, thank you for keeping things going in the green rolling hills of Kwazulu-Natal.

May I also welcome members who will be joining us on the executive committee at the beginning of next year. Francois Bester, thank you for your enthusiasm to take over as business manager of the newsletter. Your keen support of Operations Research as sponsor of various functions and awards has already been noticed and is much appreciated. Having mom and dad serving on the executive committee, maybe Francois Jr. will develop a keen interest in Operations Research? David van der Merwe, thank you for your courage to take over the colossal task

of running our website. We know you will be successful with the support you have of your North Western province colleagues (and the rest of us of course). Maseka Lesaoana, it is good to have someone from the banks of the mighty Limpopo River serving as additional member on the executive committee – thank you for your willingness. Carel Anthonissen, after spending time as Operations Researcher down South and up North, and in the process becoming the winner of our Masters student competition, thank you for becoming the custodian of Operations Research interests in the eastern province of Kwazulu-Natal.

I will leave the presidency of Operations Research in South Africa in the capable hands of a dear friend, Sarma Yadavalli, at the end of 2007 and will take over as vice-president at the beginning of the new year. Sarma, your enthusiasm for Operations Research is contagious. Thank you for the exemplary way in which you served the Society as vice president for the past year. I have high expectations of where you will guide us over the next two years and know that I will not be disappointed.

To each Operations Researcher and friend of Operations Research who might read this letter, thank you for the energy, time and love you put into keeping Operations Research healthy and well-alive – especially in South Africa. Thank you to each executive committee member who will continue their duties. Thank you to each chapter committee member. Thank you to each member of ORSSA. Please give my thanks also to those who might not have read this letter but who have also contributed to the field of practice I came to love - a home called Operations Research.

May God bless you over the coming festive season.

Marthi Harmse

ORSSA Executive Committee 2007



Back Row: Basie Kok, Ozias Ncube, Isabelle Nieuwoudt, Jan van Vuuren, Johan Joubert, Stephan Visagie, Leo Tomé, Hennie Kruger, Wim Gevers.

Front Row: Neil Manson, Sarma Yadavalli (Vice President), Marthi Harmse (President), Margarete Bester.

MEMBER PROFILE: SARMA YADAVALLI

by Basie Kok (bkok@dip.sun.ac.za)

**Sarma Yadavalli**

Sarma completed his M Sc (Statistics) in 1978, and obtained his Ph D in Stochastic modeling of Reliability in 1982.

Sarma is currently Professor of Operations Research in the Department of Industrial & Systems Engineering at the University of Pretoria. Sarma supervised 8 Masters and 10 Doctoral students so far, and currently 2 Masters and 5 Doctoral students are pursuing under his supervision. His research interests include, Stochastic modeling and their estimation problems towards Reliability theory, Inventory modeling and Manpower Planning. He has so far published 90 research publications in various national and international journals (Applied Mathematics and Computation, IEEE Trans. Reliability, Microelectronics and Reliability, Asia-Pacific Journal of Operational Research, ORION, SASJ, SAJIE, International Journal of Systems Science, International Journal of Production Research, International Journal of Production Economics, International Journal of Operations Management, Stochastic Analysis and Applications etc). He has reviewed over 100 papers for 25 ISI accredited journals. Sarma is an Associate Editor of the Asia-Pacific Journal of Operational Research.

How long have you been involved in the field of OR and in what capacity.

When I started my Ph D in 1978, my supervisor asked me to read and present within a month, the book, 'Priority Queues' by N K Jaiswal. He wanted to introduce me to the area of Queues. I then completed three chapters of the book. It was customary for the research group to participate in 'Brown bag' seminars. This was really a great opportunity for me to learn from my seniors. During these discussions, when one of seniors was presenting a problem in reliability engineering, I found that the problems in reliability are almost similar to Queuing models. In the process I discovered simpler solutions with lesser assumptions to the difficult problems that the seniors were struggling to solve. It was a challenge to present the model to my supervisor in a week, which led to a publication in IEEE Transactions in Reliability (1981). That was the beginning of my seriousness into OR modeling.

How did you get involved in ORSSA and what attracted you to it?

I was concentrating more on estimation problems in reliability, as I was more involved with the Department of Statistics at the University of Transkei since 1989. When I joined the Department of Industrial & Systems Engineering at the University of Pretoria, I started focusing more on supply chain management with an emphasis on inventory modeling. My involvement in ORSSA started more seriously from this point on.

Many OR practitioners in South Africa, including yourself, operate from within academia. What do you feel ORSSA as a society can do to utilize the effectiveness of academia as a platform for producing good theoretically based OR research in order to facilitate mainstream industry OR implementations that will bring credit to the profession and to the society?

The interaction between academia and the industry is most important. ORSSA has members from both academia and industry. The society is a great platform for both these players to negotiate different projects. This will be of mutual benefit, and will certainly bring the credit to the society.

The catch phrase 'The Science of better' seems to be a favorite amongst OR practitioners. What do you think is the perception of OR as a science within the Academic community, and what do you think ORSSA is doing or can do to maintain or improve this reputation?

Operations research is the application of the methods of mathematical science to complex problems arising in the direction and management of large systems of men, machines, materials and money in industry, business, government and defence. The academic community must ensure to spread the belief that the purpose of OR is to help management to determine its policies and actions scientifically.

Have you experienced or been involved in a successful theoretical or practical OR related project recently?

The challenge lies in tackling the diverse areas of Operations research, and create interest in this subject. Specialists in OR are not always the decision makers themselves; they only provide a rational basis for decision making to executives. There is a gap between who provides a solution and who wishes to use it. Due to this gap, management sometimes offers resistance to the use of OR. Hence there is a need to balance the theory and practice. Many theoretical projects have been done under my supervision, in many areas of OR (reliability problems for complex systems, inventory for business, and manpower planning with promotion policies). Theoretical models in AIDS epidemiology were also developed.

During the recent ORSSA/ORPA conference 2007, it was clear that the international OR community are expecting to be a big part of OR facilitation in Africa. Do you feel is a justified expectation, and if so, what do you think is needed in order for ORSSA to effectively bring OR to the masses in Africa?

With my limited experience in other parts of Africa, the OR needs to be strengthened and OR practitioners need to be trained. ORSSA is the correct body to take up this challenge. African delegates must be encouraged to participate in forthcoming conferences, and workshops must be conducted on a regular basis.

You are currently involved in organizing the upcoming IFORS 2008 conference in Johannesburg. I am sure

hosting such a large conference will not be a wonderful experience for individuals but also create an enormous opportunity for exposure as a society. Would you like to share some of the milestones achieved by the organizing committee to date, and is there a message which you would like to send ORSSA members with regards to taking full advantage of this opportunity?

This is the first time that South Africa is hosting IFORS conference in this continent which in itself is a big milestone. It has been a daunting task for the organizing committee to attract sponsors in support of this event. This will be an opportunity for ORSSA members and their African counterparts, for networking with international experts in the field.

You are to become the president of ORSSA in 2008. What

is your vision for the society during your term as president and what message would you like to send to ORSSA members?

In spite of taking the lead in 1950s in the development of OR, South Africa could not sustain the pace. Though substantial work continues in OR related areas, the status of OR in South Africa needs to be boosted to match international standards. OR is one area where South Africa and the other developing nations can co-operate. We need to use OR methodologies effectively to deal with some economic problems, particularly economic growth. ORSSA members are aware that there is plenty of work to be done using OR methodologies both in private sectors and Government. My vision for ORSSA is to establish it prominently in the international arena. It will be my earnest endeavour to stimulate research in the field of OR and I believe that the journal ORiON will be instrumental in achieving this goal.



ORSSA Fellow – David William Evans

Citation: by Wim Gevers, on behalf of the Executive Committee of ORSSA

David William Evans was born in England on 11 December 1946. After completing his schooling in Yorkshire he enrolled at Cambridge and graduated with a MA in biochemistry. He continued his academic endeavours and read for the MSc in Operations Research and Management Studies at the Imperial College in London. Not only did he distinguish himself academically, but he was also an accomplished sportsman and played first team basketball and cricket, and he also achieved a Half Blue for Basketball at Cambridge.

He first few years of his working career he spent in the UK and then joined the Imperial Chemical Industries' South African subsidiary, AECI, in the early 1970's. He received permanent residency in South Africa in 1974. During the early part of the career he was involved in some challenging OR problems, for example: the simulation modelling of animal metabolism; the simulation of optimal storage facilities for AECI's multi-million Coalplex project; Geostatistical ore reserve estimation for an open cast phosphate mine; investment modelling of a fertilizer complex; optimising profitability and operations in the multi-million chlor-alkalis and plastics business; computerised decision support models for complex decentralisation decisions and various forms of multi-million-per-annum contracts between AECI and the Chamber of mines. His responsibilities in AECI grew as he successively became Information systems manager in the second half of the 1980's, Logistics manager in the early 1990's and Information Technology Manager in the later 1990's.

After a brief stint as an independent Strategic Management and IT consultant he joined Kohler Packaging as divisional IT director and subsequently was senior consultant at Value Analytics where he was intimately involved with the development and implementation of executive information systems, IT and strategy consulting for a number of clients. From 2003 onwards he has been the Senior Strategic Planner at the Development Bank of Southern Africa where he supports

the CEO and the executive management team (including the Chairman and Governor) in analyzing and planning Strategy for the Bank.

Throughout his challenging business career he has remained a dedicated and loyal member of the *Operations Research Society of South Africa* (ORSSA) and has served the society in a variety of rolls. He served on the National Executive and held the portfolios of Newsletter Editor, Vice President and led the society as President in 1985. Later he returned to the national executive and served as Treasurer. In addition he has served the Johannesburg Chapter over an extended period of time as chairman, secretary and treasurer. He has acted as referee for papers in ORiON, and served as guest editor for an edition in 1998. He has organised conferences and served on a number of organising committees. The practical experience and insights that he developed has been the core of some twenty papers presented at conferences and seminars of ORSSA and other professional societies.

Dave is involved at Wits University's School of Mechanical Engineering as Advisory Board member and external examiner for the past twenty years for courses in Operations Research as well as for MSc theses. He has also been invited as guest lecturer at the Universities of Cape Town, Stellenbosch and Witwatersrand and at the Gordon Institute of Business Science. Professionally he is also a member of the *Computer Society of South Africa* and the *South African Production and Inventory Control Society*.

Dave Evans is the epitome of an OR specialist that developed into a respected business leader and manager, while staying true to his roots in OR. For his numerous contributions to the profession of Operations Research in general and his service to ORSSA over many years he was duly and unanimously elected Fellow of the Operations Research Society of South Africa at a meeting of the Executive committee in June 2007.

ORSSA Category 1 Recognition award Hennie de Kock

Citation: by Isabelle Nieuwoudt, on behalf of the Executive Committee of ORSSA

Hendrik Cornelis de Kock was born on February 25th, 1946. He matriculated with an A aggregate in 1962 and enrolled for a Bachelor of Science degree at the University of Stellenbosch the following year. He obtained this degree in 1965 and followed it up with an Honours Bachelor of Science degree in 1966 and a Master of Science degree in 1968, all three *cum laude* from the University of Stellenbosch. In 1968 and 1969 he lectured at the Department of Mathematics at the University of the Western Cape. He left academia during the period 1970-1977 to become a farmer. On his return to the academic arena in 1978, his research interest in Operations Research centered around the agricultural sector and in 1988 he obtained a PhD from the University of Stellenbosch with a dissertation titled *Ontwikkeling en toepassing van wiskundige programmeringstechnieke vir besluitneming by voermengsel probleme* under supervision of Marius Sinclair. After obtaining his PhD, he was promoted to senior lecturer at the Department of Applied Mathematics at the University of Stellenbosch in 1989 where he trained many OR students until he was employed as associate professor at the Department of Logistics at the University of Stellenbosch in 2000 where he continued to nurture OR students until his retirement in March this year.

He has been a member of ORSSA for many years, regularly attending and making presentations at conferences and chapter meetings, and regularly publishing in ORiON. Together with co-author Marius Sinclair, he received the Tom Rozwadowski Award from ORSSA in 1991 for their paper titled *Three-level decomposition approach for solving feedstock problems on micro computers* published in JORS, volume 41, 1990. Although he published a number of papers, his sentiments towards research was not on the publication of his research *per se*, but has always been on the practical implementation thereof, thus contributing towards the agricultural sector of this country. Some of his practical implementations of OR includes a recording system used widely in the dairy industry for determining optimal nutritional feeds, a monitoring system used in the baking process at "Blue Ribbon" and the development of a computer system to monitor the cost of spraying fruit orchards in the Ceres valley.

Using his wide variety of experiences in practical OR he contributed significantly in the training of numerous Operations Researchers over many years, first at the Department of Applied Mathematics and then at the Department of Logistics at the University of Stellenbosch. For these contributions to the profession of operations research over a long period of time, Hennie de Kock was duly and unanimously nominated for an ORSSA Recognition Award: Category I (To a retired member of ORSSA for outstanding contributions over a long period of time) at a meeting of the Executive Committee on 9 September 2007.



Hennie de Kock receiving his award at the ORSSA conference 2007 banquet dinner.

QUERIES AND CONTRIBUTIONS

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Contributions and other forms of communication with the editor can also be conducted from the website at:
www.orssa.org.za.

CHAPTER NEWS AND EVENTS

For up to date information regarding provincial chapter events and news, please visit our website at:

<http://www.orssa.org.za>

ORSSA Category 1 Recognition award Philip Fourie

Citation: by *Isabelle Nieuwoudt, on behalf of the Executive Committee of ORSSA*

Philippus du Toit Fourie was born in Klerksdorp on September 7th, 1941. In 1963 he obtained an MSc degree (cum laude) in Physics from the University of Stellenbosch. This was followed-up by a PhD in Theoretical Nuclear Physics in 1972 from the Rand Afrikaans University. In 2004 he also obtained an MPhil degree in Environmental Management from the University of Stellenbosch.

He started his career in the Division of Theoretical Physics at the Atomic Energy Board where he was employed as a scientist from 1964 to 1972. He then joined the Department of Applied Mathematics at the University of Stellenbosch where he lectured for thirty years from 1972 to 2002. During this time he made valuable contributions to all aspects of teaching including lecturing, assessment, moderation and curriculum development. His research was mainly in the field of Operations Research where he was involved in applications of mathematics to problems arising in business, government and medicine disciplines. During the period 1999 – 2003 he was joint project leader for a project funded by the Dutch government under the SANPAD program which involved researchers from the University of Cape Town, University of Stellenbosch and the Peninsula Technikon. This project focused on the determination of priorities for the capital budgets of local authorities.

Philip is also interested in environmental issues and following his MPhil degree in Environmental Engineering, he presented a module in Environmental Engineering in the Department of Mechanical Engineering at the University of Stellenbosch in 2004. He is presently involved in helping with an environmental module for first year students in the Faculty of Engineering. In addition to this, he also has a great interest in sustainable development and is associated with the Sustainability Institute of the University of Stellenbosch as well as the Lynedoch EcoVillage.

Philip was, and still is a great servant in community development. He acted as secretary of the Helderberg RDP forum during the period 1995 – 1999. Since his retirement he worked as a volunteer at the Masincedane Community Service where he offers free training for the hospitality industry to unemployed work seekers. He also assisted with fund-raising and administrative functions.

Philip is a life member of the Operations Research Society of South Africa and served as a member of the Executive Committee from 1997 to 2002. He also served as President of the society during 2000 and 2001. Other affiliations include Member of WESSA, the Botanical Society and the Field Guides Association of South Africa.

For his contribution to the Operations Research profession in general, and in particular at the University of Stellenbosch, and

for his services to ORSSA over many years, Philip Fourie was duly and unanimously nominated for an ORSSA Recognition Award: Category I (To a retired member of ORSSA for outstanding contributions over a long period of time) at a meeting of the Executive Committee on 9 September 2007.



Philip Fourie receiving his award at the ORSSA conference 2007 banquet dinner.

DISCLAIMER

The views expressed in this newsletter are those of the contributors, and not necessarily those of the Operations Research Society of South Africa. The Society is not responsible for the accuracy of details concerning conferences, advertisements, etc., appearing in this newsletter. Members should verify those aspects themselves if they intend to respond to them.



ORMS Today's

ORMS Today is the official magazine of INFORMS. Visit <http://ormstoday.pubs.informs.org> or go to <http://www.informs.org/> for more information..

Wine, Recognition awards and OR...

by Isabelle Nieuwoudt (isabelle@sun.ac.za)

During the banquet at this year's annual ORSSA conference on 12 September 2007 a few awards were once again made to a number of worthy recipients. Hennie de Kock and Philip Fourie both received the Category I Recognition Award and later during the evening as I handed a bottle of wine¹ to Philip I told him this is to be enjoyed by him *and* Hennie. On 28 September 2007 Philip turned this sharing of the bottle of wine with Hennie into quite an enjoyable afternoon amongst OR lovers in the Stellenbosch area. Between funny and memorable stories of OR classes and ORSSA conferences¹ we toasted Hennie and Philip for their life-long contributions in teaching OR for which they received the above mentioned award. We also toasted Gerhard Geldenhuys to whom the June 2007 issue of ORiON was dedicated on the occasion of his 70th birthday - the first time ever ORiON was dedicated to someone. Of course, in order to toast all the award recipients, we multiplied the original bottle from the conference banquet several times!

This occasion also turned out to be a historical moment in OR education in the Western Cape. During 1961 Gerhard Geldenhuys was the first lecturer in South Africa to introduce OR to third year students. At the time Gerhard was at the former Department of Applied Mathematics at the University of Stellenbosch. Over the next 45 years a large number of OR practitioners in South Africa obtained their OR education at the Department of Applied Mathematics at Stellenbosch University. During later years the Department of Logistics at

the University of Stellenbosch also started including OR courses in their programmes.

After the retirements of Gerhard Geldenhuys and Philip Fourie, as well as the resignation of Elmari du Toit, the OR team at Applied Mathematics suffered a loss in terms of numbers. In 2001 Hennie de Kock moved to the Department of Logistics, shrinking the OR team at Applied Mathematics to two lecturers only, namely Jan van Vuuren and myself. Recently, after the amalgamation of the former Departments of Applied Mathematics, Mathematics and Computer Science at Stellenbosch University in 2006, the new Department of Mathematical Sciences decided not to strengthen OR in their programmes. In March 2007 Jan van Vuuren was appointed Head of Operations Research within the Department of Logistics. Finally, as from January 2008 I will also join the OR team at Logistics.

Therefore, on this historical afternoon of 28 September 2007 the retired OR education giants from the former Department of Applied Mathematics present (Gerhard, Philip and Hennie) sort of officially handed over the OR baton at Stellenbosch University to the capable and OR-enthusiastic people at the Department of Logistics to strengthen OR education in the south. I look forward to the years to come, finally to be part of a large enough OR team myself to be able to provide students with a wide range of OR disciplines, giving them a good basis to become successful OR practitioners.



Champagne and wine, the perfect compliment for reminiscence!



Philip Fourie, Gerhard Geldenhuys and Hennie de Kock enjoying the wine at the function.

¹Francois Bester from Oprecon (Operations Research Consulting) donated bottles of wine to be handed to the award recipients.

²Who present that day will ever be able to erase the picture of Wessel Pienaar demonstrating how a female student applied cream to herself in the front row of his class while he was trying his best to continue his lecture with a straight face!

Nedbank reduces time to intelligence by 1000 times with SAS SPDS

Financial giant Nedbank has managed to dramatically reduce the time to information of its Business Intelligence (BI) and Analytics systems, with the deployment of SAS Scalable Performance Data Server (SPDS).

The Business Case

Nedbank was facing a challenge in that it was taking in excess of 13 hours to access and draw data from SAS datasets in order to generate a mart from a star schema, which the users would then use to do queries with, via Enterprise Guide. This translated to a massive delay in reporting, making real-time BI and Analytics just about impossible. After calling on its BI partner SAS Institute to investigate the issues that may be causing the problems, SAS suggested that it try deploying the SPDS technology in the Nedbank environment.

"In all honesty we were asking a lot from a relatively underpowered technology environment, but when it takes more than 13 hours to get to the data you need to, it's just not intelligence," says Christo Toerien, Group Technology Executive: Data Warehouse Infrastructure at Nedbank. "That said we called on the team at SAS to come and help us formulate a solution, using the technology we had, without reinventing and redesigning the entire system."

The challenge

With time to data from the Nedbank Debt Manager being what it was, SAS and Nedbank had to bring the time to construct the data view using the ETL tools down. Some challenges facing the project included the fact that both the Analytics and BI tasks had to be done off the same server.

Says Nicholas Eayrs, Manager – EMEA Solution & Technology Innovation Centre at SAS Institute Global: "The Nedbank situation was not unique but it was challenging. The company currently runs IBM pSeries hardware and the particular system we were working with was running on the back of a SAS dataset, and needed the capability to be able to update a dataset while it was being queried. We had a quad processor dual core partition to work with and needed to reduce the time to intelligence while at the same time ensuring that we didn't impact the Total Cost of Ownership of the infrastructure footprint."

The technology

With very little time at hand, it was identified that Nedbank already had SPDS as part of the Old Mutual Group enterprise licensing agreement, and this could be used to address the data access issues. The team quickly swapped the data store from the SAS dataset to the SPDS subsystem. Instead of creating a separate mart, a view on the star schema was created reducing the previous 13 hours it took to transact with the system to mere seconds. All of this while at the same time keeping the high performance we required from a reporting perspective.

SPDS is a native tool to SAS, which serves large numbers of concurrent users through the use of parallel processing and data server capabilities, it offers both vertical (user and queries) and horizontal (data volume)



scalability. The technology is optimised to deliver subsets of information that need to be harvested from large enterprise data mountains on demand.

The solution

Says Adrian Mattioli, EDW Infrastructure Manager at Nedbank: "SPDS was rolled out in as little as three days for development and as little as 10 minutes for Query and Analysis and Production once the configuration could be duplicated this dramatically reduced the amount of time it takes for us to access our data, and what is even better is that we have not had to purchase any additional hardware or software to make it happen. It truly completes our Intelligence Storage Offering."

When installed SPDS simply embeds itself and just acts as an interface within your system, integration is seamless and it can work with just about any open standard database. Nedbank is now able to take advantage of the fact that its BI and Analytics applications maintain consistent performance and that ETL processes do not exceed the time available as the amount of your enterprise data continues to grow.

Benefits include:

- * Significantly speed up the gathering of subset information with the use of parallel storage technologies and hardware.
- * Optimised performance for both business and analytics applications, through a single integrated platform.
- * Reduction in extraction, transformation and loading times.
- * The ability to connect to data from different servers
- * Data compression has enabled it to save storage space and also speed up processing.

To end

"Nedbank was given a fully functional system which supports the business aims of the organisation, in just on three days. It is cases like these which highlight the fact that sometimes the intelligent use of what you already have, can solve your technology challenges without having to spend more money on additional software and hardware to support your business aims," ends Eayrs.

"It's all about more for less and bridging that gap from time to intelligence."

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THE
POWER
TO KNOW.

Presidential Report 2007

by Marthi Harmse (marthi.harmse@sasol.com)

Presented at the Annual General Meeting, University of Cape Town, Cape Town, Western Cape - 12 September 2007

INTRODUCTION

The vision of the Operations Research Society of South Africa (ORSSA) is to be a natural professional home to all persons who are involved in a systematic way of decision support, for the maintenance and advancement of all areas of Operations Research (OR) and the creation of opportunities for shared learning and networking amongst all members. Various venues are followed to realise the above vision and are discussed in this report with an indication of what has been achieved over the past year.

STRUCTURE

Executive committee

At the annual general meeting in Pietermaritzburg last year the executive committee was elected unopposed. The committee consists of:

President	Marthi Harmse
Vice President:	Sarma Yadavalli
Secretary	Isabelle Nieuwoudt
Treasurer	Wim Gevers
Newsletter editor	Basie Kok
Newsletter Business Manager	Leo Tomé
ORiON Editor	Jan van Vuuren
ORiON Business Manager	Stephan Visagie
Webmaster	Petrus Potgieter
Additional Members	Ozias Ncube Johan Joubert Hennie Kruger
IFORS representative	Paul Fatti
Archivist	Ilze du Plooy

The following chapter chairpersons elected at their respective annual general meetings also serve on the executive committee:

Johannesburg	Neil Manson
Pretoria	Danie Payne
KwaZulu-Natal	Yvonne Fletcher
Western Cape	Margarete Bester
Vaal-Triangle	Andy Msiza

Membership

Membership is the heart and sole of the Society. The next table indicates members who resigned from ORSSA and memberships which were cancelled due to expiry in comparison with new members who were accepted for the period January 2006 to December 2006 as well as for the previous financial year namely June 2004 to December 2005.

	FY 2006	FY 2004/2005
Resignations	4	1
Expirations	14	5
New members	54	48
NETT GROWTH	36	42

At the end of the 2006 the total membership stood at three hundred and thirty seven:

	FY 2006
Full	235
Student	67
Life / retired / honorary	18
Corporate	3
Libraries	8
Sister organisations	6
TOTAL	337

Finances

The cash flow statement for the twelve months from January 2006 to December 2006 is indicated below:

Income	
Membership fees paid	34160.66
Adverts	8160.00
Conference 2005: net	113192.00
Conference 2006: net	3079.57
Interest	3464.77
	162057.00
Expenditure	
Postage, etc.	1675.63
Newsletter and Journal	66078.90
IFORS 2008	65876.26
Student competition	18226.42
	151857.21
Nett surplus	10199.79

The share of ORSSA of the net proceeds from the 2005 conference was only brought to book in 2006. For the 2006 conference the costs of the invited speaker were debited against the conference surplus and largely the reason for the low net surplus. The expenses shown for IFORS 2008 were mainly for the inspection by an IFORS delegation and various publicity activities. Until the end of 2006 the Society has invested R72 500 in the conference which will be charged against the conference income in due course.

Membership fee collection continues to be an issue. In 2006 receipts were 21% down on the previous financial period. The Society would like to thank the previous treasurer, Dave Evans, for submitting the above information in spite of his

responsibilities in the organizing committee of IFORS 2008 as well as a tight work schedule. The Society would also like to thank the current treasurer, Wim Gevers, for the able way in which he took over the responsibilities for the finances and membership matters from Dave.

INTERNAL NETWORKING

Website

The website is running and populated with up to date ORSSA related information. Some information still must be transferred from the old website to the current one. The webmaster will report at the annual general meeting. Petrus Potgieter is thanked for his innovative ideas in running the ORSSA website. He will not be available to continue serving the Society as webmaster.

Newsletter

Two issues of the quarterly newsletter appeared earlier during the year. The next issue will be distributed right after the conference and the last issue for the year is planned for December. Both of the remaining issues for the year are already filled, which proves again the popularity as well as the excellence as marketing tool of the newsletter. The editor will report at the annual general meeting. The business manager, Leo Tomé, is commended for his excellent marketing skills. Unfortunately Leo is resigning at the end of the year. A special word of thanks to Basie Kok for the enthusiasm with which he is editing the newsletter.

ORiON

Volume 23(1) of ORiON was published earlier this year and Volume 23(2) will appear towards the end of the year. Both of these issues already received the required number of papers after some papers had to be rejected. Conference delegates are encouraged to submit their presentations for publication in future editions of ORiON. Volume 23(1) is a very special issue dedicated to Gerhard Geldenhuys at the occasion of his seventieth birthday in recognition of his tremendous contribution towards OR in South Africa. The editor will report at the annual general meeting. Jan van Vuuren is applauded for the excellent job he performs as editor of ORiON together with the business manager, Stephan Visagie, associate editors, anonymous referees and ORSSA members publishing in ORiON.

Annual Conference

This year the annual conference is hosted in Cape Town for the first time since 1998. It is the first time that we have a joint conference with Operations Research Practice in Africa (ORPA) and we are excited about all our OR colleagues from the rest of Africa who could join us. Sixty seven papers are delivered on various OR topics and more than one hundred delegates are attending. The conference is preceded by the first INFORMS/ORPA workshop on OR Education and we are inspired by many novel approaches used to develop new upcoming Operations Researchers. The conference is honoured

by the many delegates from abroad who could share their ideas with us. Thank you to the organising committee of the conference under the able leadership of Theo Stewart, namely Wim Gevers, Leanne Scott, Jan van Vuuren, Basie Kok and Ian Durbach. The Society would also like to thank the organising committee of the workshop on OR Education under the leadership of Jim Cochran, namely Johan Joubert, Neil Manson and Ozias Ncube.

Chapters

As mentioned at previous occasions, chapters are the lifeblood of the Society. Last year a workshop was conducted to review the way we are managing our chapters and to share lessons learnt and networks established. A survey was also conducted to determine members' preferences regarding meeting schedules, venues, formats and topics. Neil Manson is thanked for this initiative. Four of the five chapters, namely Johannesburg, Pretoria, Vaal Triangle and Western Cape are meeting on a regular basis. Each chapter will report individually during the annual general meeting. The chapter chairpersons with their committees are thanked for the hard work they put into keeping OR alive in South Africa. They are Margarete Bester, Yvonne Fletcher, Neil Manson, Andy Msiza and Danie Payne. Unfortunately Yvonne Fletcher is not able to continue her duties in 2007.

EXTERNAL NETWORKING

IFORS

ORSSA remains an active member of IFORS with Paul Fatti our IFORS representative, Hans Ittmann editor of the IFORS newsletter and Theo Stewart chair for Developing Countries. Preparations for hosting IFORS 2008 in Sandton are well under way. ORSSA members are strongly encouraged to register as early as possible for this prestigious event hosted in Africa for the first time in history.

EURO

At EURO XXII I represented ORSSA at the EURO council meeting. The discussions included references to the journal published by EURO namely EJOR. Currently they have a seventy percent rejection rate which might have future implications for ORiON. In EJOR emphasis is put on articles of a methodological nature.

In the discussion about branding OR, a call was made for a concerted effort to contribute to "OR in sight". A virtual clock was established on the EURO website which will be utilised to publish examples of the application of OR in everyday life. ORSSA members are strongly encouraged to submit contributions on <http://optimierung.mathematik.uni-kl.de/EURO24OR/>. Support was also asked for the Africa project.

After the Workgroup on OR for Development was established last year, we hosted our first workshop preceding EURO XXII which was attended well by participants from all over the world. New networks were also established.

Upcoming events include EURO XXIII to be hosted in Bonn (Germany) in 2009 and EURO XXIV to be hosted in Lisbon, Portugal in 2010. Details of future ORP³, Mini EURO Conferences (of which some will be hosted at UNISA and WITS) and European Summer and Winter Institutes are available on the EURO website (www.euro-online.org).

SACNASP

Those members not registered with another professional body yet, are encouraged to register as professional natural scientists in order to adhere to national legislation. An application form and information brochure are available at the website www.sarnap.org.za. Petrus Potgieter is thanked for his representation of ORSSA on SACNASP where OR is categorized under Mathematical Sciences.

RECOGNITION

Tom Rozwadowski medal

This year at the conference banquet the Tom Rozwadowski Medal will be awarded to an ORSSA member who published the best OR paper during 2006. Sarma Yadavalli convened the nomination process, while a committee consisting of Dave Evans, Paul Fatti, Hans Ittmann and Paul Kruger was responsible for the adjudication and final selection. We thank the committee members for their sterling work.

Student competition

At this year's conference banquet prizes will be presented to the winners of the student competition in the categories of best Honours project and best Masters project. Margarete Bester facilitated the process and Hennie Kruger and Petrus Potgieter refereed the entries. We are thankful to SAS for their continuous sponsorship of the competition. Thanks also go to the committee for ensuring that ORSSA recognizes the contributions made by students.

Fellows / recognition awards

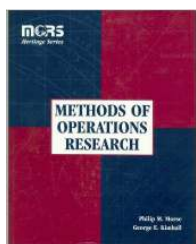
Members will be honoured as fellows and with recognition awards at the conference banquet. I chaired the nomination committee consisting of Isabelle Nieuwoudt, Wim Gevers and Hennie Kruger. I was touched by the dedication demonstrated by the committee members to give recognition to fellow OR practitioners – thank you.

Conclusion

I would like to thank each ORSSA member – especially the executive committee – for creating a natural professional home to all persons who are involved in a systematic way of decision support, for maintaining and advancing all areas of OR, and for creating opportunities for shared learning and networking.

BOOK REVIEW

By Hans Ittmann hitmann@csir.co.za



Methods of Operations Research by Philip M. Morse and George E. Kimball, 1998 reprint (originally published in 1951). The Military Operations Research Society, USA. pp. 158. ISBN 0-930473-07-8, \$25.00 plus freight (www.mors.org)

Why would anyone be interested in a review of a book published in 1951? You may even ask why anyone would want to do a review of a book published more than 50 years ago. The answer is very logical, firstly this is the first book ever published on the topic of Operations Research. Secondly the Operations Research fraternity in South Africa recently had the privilege of meeting with a group of OR people from the USA under the auspices of the "People-to-People" organization. This group met with various OR people across the country. Marthi Harmse, our President, and myself met with this group first and at the end of our deliberations they presented each of us with, you guessed it, a *Science for Better* cap as well as two books: **Methods of Operations Research** and **Methods of Conducting Military Operational Analysis**. The latter book was donated to Military Operations Researchers at the Defence Research Institute while I undertook to do a review of the historical and classical OR text, **Methods of Operations Research**.

Morse and Kimball, both founders of Operations Research, published their seminal work so that the scope, methods and triumphs of operations research during World War II would be available to and appreciated by scientists, engineers and the armed forces. The book is based primarily on what the early operations researchers did during the war. What then strikes the reader immediately is that the book does not contain any of the techniques of the discipline that has become so familiar to anyone practicing OR today. No linear programming, no "any" programming, etc., these all still had to be developed! The contributions in the book is therefore very much military oriented and possibly still very applicable to the military operations research profession. Terms used and explained that I could immediately relate to because of my limited exposure to military OR included game theory, search theory and the Lanchester's equations. The rest of the terms listed in the index are all very military oriented. This does not, however, detract from the timeless guidelines and observations contained in the text. In this regard one is struck by the clarity, relevance and enduring wisdom captured in this text.

The introductory chapter defines, inter alia, OR, give simple examples, outlines the methods of Operations Research and contains many of the wisdom mentioned earlier. A number of these will be quoted here. The definition of operations research is given as the following "*operations research is a scientific method of providing executive departments with a quantitative basis for decisions regarding the operations under their control*". The scientific method implies more than "*sporadic application and occasional use of a certain*

methodology; it implies recognized and organised activity amenable to application to a variety of problems and is capable of being taught". Furthermore "operations research is an applied science utilizing all known scientific tools in solving a specific problem which provides a basis for decisions". How does one distinguish this from engineering? - "The engineer is the consultant to the builder of equipment, the producer of equipment, whereas the operations research worker is the consultant to the user of equipment". As for the role of the OR person they are very, very clear: "the task of the operations researcher worker is to present the quantitative aspects in intelligible form and to point out, if possible, some of the non-quantitative aspects that may need consideration by the executive before he reaches his decisions. But the operations research worker does not and should not make the decision". Most of these pieces of wisdom are very applicable, even today. One or two additional quotes from this chapter: "It often occurs that the major contributions of the operations research worker is to decide what is the real problem"; "the operations research worker is not a "gadgeteer"" and "a preliminary analysis based on incomplete data may often be much more valuable than a more thorough study using adequate data....crucial decisions cannot wait".

Probability is the topic of Chapter 2 and as the authors indicate the branch of mathematics which is most useful to operations research. The fundamentals of probability are dealt with initially, then simple distribution laws which include the binomial, the normal and the Poisson distributions, and finally sampling. Throughout ample use is made of examples which are mainly of a military nature.

The next chapter deals with the use of measures of effectiveness. Sweep rates measure how well an area is being patrolled or searched. Another useful measure is exchange rate i.e. the ratio between enemy loss and own loss. Comparative effectiveness compares the relative effectiveness of two different types of weapons or tactics in gaining some strategic end. Finally a whole range of examples are given to evaluate equipment performance.

Chapter 4 is titled "Strategic Kinematics" and the focus here is on force requirements. Lanchester's equations are introduced and it is shown how well these equations represent various force aspects. The next logical progression is probability analysis associated with these equations and also the more generalised Lanchester equations. Problems concerned with the increase and attrition of forces are called reaction rate problems and a

whole section is devoted to these problems.

Some important contributions had already been made by then by operations research methods to the analysis of tactics. These were developed further during the war and these extensions are covered in chapter 5. For example through statistical analysis it was possible to determine the damage due to suicide planes and from this analysis different tactics, to be used by one's own forces, could be developed. Search theory is used to determine the presence of convoys, etc and different analytical solutions involving search theory are presented. Measures and countermeasures are important to get to grips with own and enemy operations. When the enemy introduces a new weapon or tactic, it is critical to develop countermeasures too that to minimize the effect. A number of these are presented.

Chapter 6 addresses gunnery and bombardment problems. For example, what is the lethal area of a weapon i.e. the probability that a shell hits a certain area? Furthermore how effective is random bombardment? Different types of pattern firing with no ballistic dispersion and with ballistic dispersion present, are given in detail.

The penultimate chapter briefly outlines how one should go about planning operational experiments both with equipment and tactics. Finally there is a discussion on how to organise an operations research group for military service while aspects of field work is formulated and illustrated.

This book is indeed a classic in OR and although the material is based on examples from the war years it is still very interesting to get a feel of where our discipline had its origin. The scientific approach to problem solving comes through throughout the text. To conclude a final piece of wisdom from the book: "much that is included in the following chapters, is in the nature of tools which the operations research worker finds useful. A familiarity with these techniques is necessary for the worker, but it is not in itself a guarantee that the worker will be successful in operations research. Just as with every other field of applied science, the improvement of operations of war by the application of scientific analysis requires a certain flair which comes with practice, but which is difficult to put into words". **Methods of Operations Research** is worth a read even though many of our members are not involved in the military operations, it at least gives a very good perspective on where OR started and how the operations researcher dealt with problems during the formative years.

OR and Global Business

September 3rd-5th 2008, University of Augsburg, Germany

Operations Research represents one of the most successful instruments for organizing such business processes, as many applications in the areas of, e.g., supply chain management or financial management show. However, many new challenges are still on the horizon, in particular when taking environmental effects into account. OR 2008 represents a platform for both, describing successful applications as well as discussing new developments.

<http://www.wiwi.uni-augsburg.de/or2008/>

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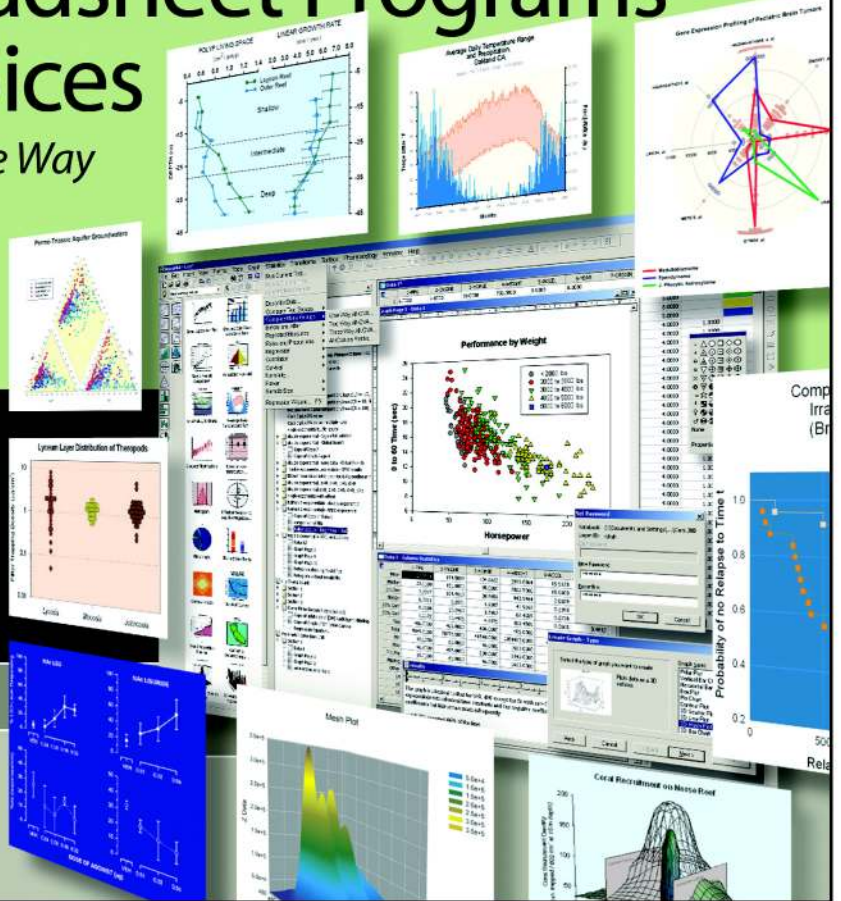
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