Operations Research Society of South Africa

Category III Recognition Award

(To a non-member of ORSSA for outstanding contributions over a long period of time)

Christiaan Jacobus Swanepoel

Citation. *By Jan van Vuuren, on behalf of the Executive Committee of ORSSA.*

Christiaan Jacobus Swanepoel was born in Stellenbosch on April 16th, 1962 and matriculated in 1980 at Vorentoe High School in Johannesburg. After obtaining a higher education diploma in 1984 and a BSc (Hons) degree in 1985, both from the then Rand Afrikaans University, he spent six years as a mathematics teacher in Johannesburg. While teaching on secondary school level, he obtained an MSc degree in mathematics *cum laude* from the University of Pretoria in 1989. The following year he moved into the tertiary education sector, accepting a position as Lecturer in the Department of Mathematics and Applied Mathematics at the University of Pretoria. He also enrolled for doctoral studies on a part-time basis and went on to obtain a doctorate in mathematics from the University of Pretoria in 1995, based on a thesis titled *Ramsey properties of trees and parameter words*. During that year he was also appointed as a Senior Lecturer in the then Department of Quantitative Management, now the Department of Decision Sciences, at the *University of South Africa* (Unisa). He was promoted to Associate Professor in the same department in 1997 and served as deputy head of the department during the period 1997−1999. In 1999, he was promoted to Professor of Decision Sciences and took up the position of head of department, holding this position until 2010 when he was appointed as Acting Director of the School of Economic Sciences at Unisa. This position was made permanent in 2011, and Professor Swanepoel served as Director of the School of Economic Sciences until 2016 when he made a brief transition into university management at Unisa, first by accepting an appointment as Chief: Systems and Governance Support 2016 and then as Acting Deputy Registrar during the period 2017−2018. He returned to the Department of Decision Sciences to resume his teaching and research duties in May 2018.

The research interests of Professor Swanepoel span areas of combinatorial optimisation, structural Ramsey theory, digital typography and machine learning. He has published within these areas in reputable journals, such as *Graphs and Combinatorics* and *Discrete Mathematics*, as well as in the influential series *Lecture Notes in Computer Science*. In addition, he has also supervised a number of master's and doctoral students to the successful completion of their studies at Unisa. He is a Fellow of the Institute of Combinatorics and its Applications and is member of the *Suid-Afrikaanse Akademie vir Wetenskap en Kuns*.

Professor Swanepoel was nominated for this award because he has firmly supported the sustained inclusion of traditional operations research and the introduction of more recently emerged, related areas of study as fundamental tuition and research components within the Department of Decision Sciences at Unisa over his twelve-year tenure as head of department and also thereafter in an advisory capacity. He oversaw a major modernisation of the department's curriculum during the early 2000s during which module contents were updated significantly and new modules were introduced in areas such as linear programming, nonlinear optimisation, stochastic modelling, decision analysis, financial mathematics, forecasting, neural networks, simulation, mathematical modelling of derivatives, and discrete financial modelling.

He insists on describing operations research in the broadest possible terms and was instrumental in steering the Department of Decision Sciences towards excellence in diverse areas of research such as option pricing, optimisation under uncertainty, fuzzy sets and fuzzy optimisation, multi-objective programming with possibilistic coefficients, Brownian motion, complexity and computability, quantum computing, artificial neural networks, random graph theory, water and energy management, competition and vertical/agglomeration effects in mergers, and many more, by appointing the right people and creating a working environment in which research effort is encouraged and rewarded. And all this during a period of serious instability and uncertainty in South African higher education which saw a host of rationalisation mergers between tertiary institutions that were not all research-oriented and goal-aligned.

Professor Swanepoel remains a visionary force in the department. Just recently, for example, he had the vision to establish a Decision Laboratory in the department for laboratory-based research in the decision sciences aimed at developing analysis, planning and evaluation processes for complex management tasks in organisations, industry and government. The laboratory will focus on application areas in strategic planning, complex operational decision making and collaborative management.

Although not a member of ORSSA himself, Professor Swanepoel appreciates the value that operations research is capable of adding to the skill sets and professional make-up of individuals tasked with sound decision making and decision support. In his capacity as head of the Department of Decision Sciences he facilitated the training and nurturing of a new generation of operations researchers and decision science consultants. Indeed, the Department of Decision Sciences is the leading department in the country in terms of the number of operations research graduates produced annually on bachelor's and honours levels. Its third-year and honours student numbers varied between fifty and about a hundred students per level in 2018.

For these contributions to the profession of operations research in South Africa over a significant period of time, Christiaan Jacobus Swanepoel is, on this 10th day of September 2019, duly awarded a Category III ORSSA Recognition Award. I call on the President to confer the award.