



IN  
*Memory*  
OF  
**DANIE KRIGE**

A SA LEGEND OF INTERNATIONAL ACCLAIM  
FOR HIS DISTINGUISHED CONTRIBUTIONS  
TO THE MINING INDUSTRY

1919 ~ 2013

Professor Danie Krige was a world renowned pioneer in mineral resource evaluation. Nearly all the methods used in modern mining practise to evaluate the grade and tonnage of mineral deposits were either introduced by Danie Krige, or found their origins in the research and development that he initiated. Almost all of the growth and development in geostatistic disciplines today stem from Danie's early work on regressing sampling data and mining blocks, to estimate the amount of metal that could be recovered from mineral resources. Once international mining institutions became aware of Danie's work, a large number of researchers took up the newly developed techniques of spatial analysis, which led to the introduction of the term 'géostatistique' and later termed 'Kriging' (in recognition of his distinguished pioneering work), for the mathematical process of assigning grade to individual points or mining blocks. These methods improved the quality of ore evaluation, reduced the financial risk facing investors, allowing mineral resources to be quantified in terms of uncertainty associated with the estimates.

After joining the office of the Government Mining Engineer in 1943, Danie was exposed to the problem of limited borehole valuations associated with gold mines, including mining to greater depths. Applying his own statistical insights and those of Prof. Herbert Sichel in valuing new gold mines, Danie developed a statistically based procedure to calculate ore reserves in existing operations, which was submitted as a Masters degree thesis at the School of Mining Engineering at Wits University. Danie's thesis provided a statistical explanation of the problem of conditional bias in ore block valuations. The application of Danie's geostatistical 'Kriging' procedure was successfully implemented at Anglovaal's two large gold mines in the early 1960's. The outcome of his pioneering work led to the establishment of 'Le Centre de Géostatistique de l'École des Mines de Paris', a now famous geostatistics research centre in Fontainebleau, France.

For his outstanding work, Danie was awarded honorary degrees from the Moscow State Mining University, the University of the Witwatersrand, the Pretoria University and the University of South Africa, as well as a Doctorate of Science (Engineering) degree from his alma mater. Danie was elected as a Foreign Associate of the United States National Academy of Engineers (NAE) in 2010 for his distinguished contributions to Earth Resource Engineering and Technologies, the first South African ever to receive this award. Other awards include those from the SA Institute of Mining and Metallurgy, the US Society for Mining, Metallurgy & Exploration, the South African Academy for Science and Arts, the International Association for Mathematical Geology, the International APCOM Council (Application of Computers and Operations Research in the Mineral Industry) and the University of Antofagasta in Chile. He also received the Order of Meritorious Service Class 1 gold medal (1989) and the Order of the Baobab silver award (2012) from the South African State Presidents for his exceptional and distinguished achievements.

In 1981, Danie took up the post of Professor of Mineral Economics at the School of Mining Engineering at Wits University, supervising many MSc and PhD qualifications, as well as presenting courses in geostatistics, mineral economics and decision making for mining investments, until 1991. He continued his research and consulting activities well beyond his retirement from academia, giving lectures and providing valuable consulting services to local and international mining companies.

GASA remembers the substantial impact Danie made in the global mining industry.



secretary@gasa.org.za www.gasa.org.za