BOOK REVIEW

Imagining the Elephant: A Biography of Allan MacLeod Cormack

By Christopher L Vaughan. Illustrated. R225.00 (incl.VAT). UCT Press. 2008. ISBN 978-191-989-5086.

In 1979 Allan MacLeod Cormack was awarded the Nobel Prize for Physiology or Medicine, jointly with Godfrey Hounsfield. They had, according to the Nobel committee, through their discovery of computerised tomography initiated a revolution in the field of medicine, making it possible to produce 'unbelievably clear images' by cross-sectional views of the human body. It was an innovation that was met with immediate acceptance and medical application. Computerised tomography depended on the coming together of powerful computers, the mathematical method to allow for precise definition of radiation penetration in different body tissues and structures with their various density distributions, and construction of the necessary equipment to make three-dimensional visualisation possible. Cormack had done the mathematics and Hounsfield, working quite independently, had constructed the first clinically usable tomography for scanning of the head. Very soon it was clear that the methodology could be applied to all the organ systems of the body. Moreover, it was realised that computerised tomography would make it possible to study function as well as structure – physiology and biochemistry.

Christopher (Kit) Vaughan, who is director of the medical imaging unit at the University of Cape Town, has written a carefully researched account of the development of Cormack's thinking and mathematical analysis, and of his personal and professional life at the University of Cape Town, Cambridge University, and Tufts University in the USA, where he was on the faculty for many years. Allan Cormack himself was always careful to pay tribute to the influence on his work of Professor Reginald James at UCT (remarkably, James had been mentor to another Nobel laureate as well, Aaron Klug), and to Dr James Muir Grieve at Groote Schuur Hospital, whose original idea it had been to plan radiodosimetry of tumours and to scan organs in three dimensions. Kit Vaughan brings special insights to the work of Allan Cormack and he joins the small band of biographers who are fellow scientists to their subjects (one thinks of Abraham Pais' excellent biography of Einstein *Subtle is the Lord: The Science and Life of Albert Einstein*, 1982).

The book contains several sidelines of interest: Cormack's lifelong love of Table Mountain, which he climbed regularly as a young man, and a feel for life as a student and young staff member at UCT in the 1950s and early 1960s (quite different to the present, of course). One of the more interesting insights into Cormack's thinking is provided by reproduction in the book of an essay that he wrote for a Japanese journal in 1984 on the future of science in the 21st century. Influenced by EO Wilson's classic book *Sociobiology*, Allan Cormack envisaged a merging and synthesis of ethics, politics and aesthetics with cognitive sciences – physiology, biochemistry, genetics and ultimately mathematics and physics, and an understanding of animal behaviour. It was hardly an original idea but one that enhances understanding of Cormack's deep intellect and humanity.

Peter Folb