

Citation for George Philander

Perhaps it is because his father was a poet that George Philander was able to become such a brilliant scientist. For the really great scientists have an imagination, and a capacity to think outside the box, that they share with poets. And in George Philander's case he grew up in a family steeped in literature, whose father was a great headmaster and one of the major poets writing in Afrikaans in his generation. A family that any normal society would have bound to its soul with hoops of steel.

But such was the race madness of apartheid South Africa that this family was classified in such a way as to be made to feel totally unwelcome in the very place it had lived for generations. And so in 1969 P.J.Philander, headmaster of Belgravia High School in Athlone & winner of numerous awards for his contributions to Afrikaans literature, left South Africa (following a son who was already at Harvard) with his family to teach in New York for the rest of his working life. But he continued to write in exile, most movingly, about the country he loved so much.

Die winde huil rondom my huis,
al wat vermis word is die Suiderkruis
bo Swartberg, Grootkop, Outenikwas
waar daar altyd brandhout vir my kaggel was.

George Philander inherited his family's love of knowledge and of literature. As a young teacher his father had moved around to a number of places including Calvinia, Malmesbury and Genadendal. Genadendal, as we all know, was one of the great centres of learning in South African history. Founded in 1737 by the Moravian (Lutheran) missionary from Germany, Georg Schmidt, 100 years before Lovedale on the eastern cape frontier, Genadendal was itself closed for 50 years after 1744 due to white political (& theological) opposition. Re-opened in 1794 it was to be a major educational centre for the next century and a half until apartheid's assault on learning set out to destroy so much that had been so painstakingly built up all around South Africa. But not before George Philander was able to come to UCT.

Majoring in Applied Maths and Physics with a B.Sc. in 1962 and with Applied Maths Honours in 1963, the young Philander went on to Harvard where he obtained his Ph.D. in 1970 continuing down the road as a post-doc. fellow in the department of Meteorology at MIT. Thereafter, for the next seven years, 1971-1977, he was a research associate in the Geophysical fluid dynamics program at Princeton before becoming consultant to the World Meteorological Organization in Geneva. Returning to Princeton in 1978 he spent the next 11 years as Senior Research Oceanographer, apart from one year (1982) when he was Visiting Professor at the Musee Nationale d'Histoire Naturelle in Paris. Eventually he was to become Chairman of the Department of Geosciences at Princeton University for 7 years: 1994-2001. Then he went off to Caltech in Pasadena for a sabbatical year before becoming Knox Taylor Professor of Geosciences at Princeton and deciding that he would also spend some of his time, each year, back at UCT in a country that was, at long long last, only too happy to welcome him home. We welcome also today, his brother Dennis, now a psychiatrist in the United States.

What then have been George Philander's major contributions to science during his long exile? In their motivation for this honorary doctorate six senior uct professors from cognate disciplines argue that the understanding that has come about in recent years "of the global connectivity between ocean and atmosphere....may be compared to the conceptual revolution brought about by the theory of relativity in physics at the beginning of the twentieth century and the concept of plate tectonics in the field of marine geology". And George Philander's work on the El Nino-Southern Oscillation phenomenon has been seminal in this process of understanding climate change and climate variability. In a world suddenly

aware of 'global warming' and desperate to understand what is happening there is scarcely any research anywhere that can be more significant or urgent than this.

El Nino, of course, started life as a warm seasonal current off the coast of Peru every 4-7 years about which few people had heard until 20 years ago. But then George Philander and others started probing that unknown space between the worlds of the oceanographers (who worried about the sea) and the meteorologists (who worried about the weather). At that time workers in these two disciplines had more than enough to cope with in understanding what was going on within their own silos that they saw little need to talk to each other. Besides, they spoke different languages. But perhaps, suggested, George Philander, just possibly things that happened in the ocean affected things that happened in the sky. And *vice versa*. Could one begin to think about the impact of heat from the sun absorbed by sea or land and then exchanged with the atmosphere as the globe rotated, making due allowance for changes between day and night; and for seasonal variations. And not forgetting sun-spots? This was a whole new way of thinking about things that explained El Nino. A new way of seeing.

No wonder it required the son of a poet to open this *venster*. The most striking aspects of George Philander's book on *Our Affair with El Nino* are not only the clarity and elegance with which it is written and the literary knowledge which it exudes quite naturally but also the fact that this hard nosed, mathematical-model-building scientist, invites his readers to consider matters from various perspectives, including that of a painter; that of a poet; and that of a musician. Great research scientist though he is, George Philander is a teacher to his bones. He is passionate about passing knowledge on to the next generation. One of the main reasons that he has come home is so that can try to help students in South Africa and beyond capture some of the excitement and possibilities of work as a scientist. We know that he will be a huge inspiration. Dare we hope that he will also apply his fertile imagination to helping us find ways of dealing with the sad state of school mathematics and science, a terrible legacy of apartheid's 'Bantu' & 'Coloured' education, which is preventing so many of our budding scientists...to say nothing of engineers or economists...from emerging.

Freeman Dyson, draws a distinction in one of his celebrated papers, between the science of Einstein and the science of Lord Rutherford: One. "emphasises ideas and theories; it tries to find unifying concepts which tie the world together. The [other] emphasises facts and things; it tries to explore and extend our knowledge of nature's diversity." [Dyson, *Infinite in all directions*, 1988:40] As Stephen Jay Gould explained, when reviewing Dyson's essays, the scientists in Lord Rutherford's tradition, "do not attempt to predict because the contingencies of history permit such a plethora of sensible outcomes; but we can explain after the fact with as much potential confidence as any science can muster. This asymmetry is not a weakness but a statement about the nature of history." [*NYReview of Books* Oct.27,1988 p.32]. To which a social scientist can only say, Amen.

But things are even more subtle than that. For as Freeman Dyson argues, it is not simply a case of Einstein vs. Rutherford, unifiers vs. diversifiers. Not either-or; but both-and. Every science, he points out, needs a "creative balance between unifiers and diversifiers". Thus biology, for example, that most diverse of sciences, needs its Darwin. And this surely is the role that George Philander has played in the burgeoning science of Earth Systems (which includes Oceanography, Meteorology & Paleontology). He has found ways of unifying the most diverse information from various fields in such a way as to increase dramatically our understanding of the world in which we live. Listening to literature, he has heeded the words of E.M.Forster, "Only connect".

Acting Vice-Chancellor, I have the honour to invite you to admit to the degree of Doctor of Science, *honoris causa*, George Philander.