

Citation for Patricia Whitelock, honorary graduand, Rhodes University, 2020

By Paul Maylam

The discipline of astronomy is one that falls literally and figuratively into the category of 'blue-sky research' – a kind of research sometimes criticised for being a luxury that a developing country like South Africa can hardly afford to support and fund. Patricia Whitelock, one of South Africa's foremost scholars in the field of astrophysics and astronomy, has through her work succeeded not only in advancing research in this field, but has also demonstrated the wider value and significance of such research, thereby dispelling the criticisms and doubts of those who question the need for this kind of work. It has been said that 'it is impossible to talk about astronomy in South Africa without the name Patricia Whitelock coming up'.

She was born in north-east England, making her what the English call a 'Geordie'. Many young children are quick to develop a fascination with stars of a certain kind – pop stars, film stars, sports stars – but from the age of nine young Patricia developed her own fascination with actual stars, so much so that her early ambition was to become an astronaut and explore the universe first-hand. But the time was too early for women in space, so she had to settle for a life of scientific exploration, encouraged to pursue a career in the field by Patrick Moore, the famous British populariser of astronomy – her training culminating in the award of a PhD at the Imperial College of Science and Technology in London.

Professor Whitelock has herself said that 'astronomy has to be your life, not just your job, or you are unlikely to do well or be happy. If you are going to get married...then you must find a partner who is a true partner, because it is impossible to do everything yourself'. So she married a fellow astronomer, John Menzies, in 1977 – the couple soon after moving to Cape Town.

Thus began a career of 40 years or more in this country researching, teaching and promoting astronomy. Her path-breaking research has centred on the late stages of stellar evolution, with a particular focus on the Milky Way, observing stars undergoing loss of mass as they near the end of their lives – a process that has been poorly understood, but is of crucial importance, as through this process much of the carbon in the universe is distributed and becomes available for a new generation of stars and planets. This is challenging, painstaking research as the process has to be observed and recorded over many years.

This work has generated over 200 articles in major journals, and over 100 papers appearing in conference proceedings or as book chapters. It has also

brought her international recognition, with visiting fellowships in France, the Netherlands, Germany and Poland.

There have, too, been visiting or adjunct professorships at the University of Cape Town, between 2006 and 2016, but most of Professor Whitelock's work has been conducted outside universities – mainly at the South African Astronomical Observatory where she has held different positions over the past forty-two years, including a stint as its director in 2011 and 2012. Also to be noted is her distinguished involvement in the South African Institute of Physics over the past thirty-five years, chairing its astrophysics group between 1990 and 1997, and serving as the Institute's president from 2001 to 2003. Add to this her 38-year involvement in the International Astronomical Union.

One of Professor Whitelock's most significant contributions has been to promote and raise the profile of astronomy in South Africa in various ways – for instance, in ensuring the country's participation in the globally important Square Kilometre Array (SKA) project, attending the signing of the SKA agreement in England in 2000, and persuading Rhodes University astrophysicist, Justin Jonas, to take the lead in driving South Africa's involvement in this major endeavour.

The SKA project in turn highlighted the need for more astronomers in the country – and so Professor Whitelock helped establish the National Astrophysics and Space Science Programme to train postgraduate students in the discipline and related fields, serving as the chairperson of the programme's first steering committee from 2002 to 2013 – a programme that has driven transformation in astronomy by emphasising the training of students from previously disadvantaged backgrounds. Note, too, her participation in the International Astronomical Union's working group on women in astronomy.

A challenge for astronomers is to counter the idea that so-called 'blue-sky research' contributes little to social and economic development. Professor Whitelock has taken on this challenge – joining a team that made a successful bid to host the Office of Astronomy Development (OAD) in South Africa – an initiative that aims to use astronomy, in all its aspects, to benefit society; and serving on the OAD's steering committee which has established offices in nine countries and funded sixty-eight astronomy-for-development projects.

For her outstanding contribution Professor Whitelock has been given due recognition: a fellow of the Royal Astronomical Society for the past forty-five years; a fellow of the Royal Society of South Africa; recipient of the South African Institute of Physics De Beers gold medal in 2008 – an award considered to be the greatest distinction for achievement in physics in South Africa.

Today Rhodes University is proud to be the first university to bestow an honorary doctorate on Patricia Whitelock – recognised for her original, pioneering research – it has been said that her 'research into stellar evolution,

galactic structure and the stellar content of the Local Group galaxies has helped to broaden the frontier of astronomy both in South Africa and internationally'. Recognised, too, for promoting and advancing astronomy in this country – particularly in helping to bring the SKA project here, a project that brings with it both international prestige and economic opportunities. And recognised for her role in human capacity development, furthering the training of astrophysicists, and in bringing to the fore the part that astronomy can play in boosting social and economic development.

Mr Chancellor, I have the honour to request you to confer on Patricia Whitelock the degree of Doctor of Laws, *honoris causa*.