OUR PLACE IN SPACE UNDER THE SOUTHERN CROSS

Friday 17 April 2009 at 7pm at Campbelltown Arts Centre

Keynote Address by Dr Ragbir Bhathal

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The Mayor, Distinguished Guests and Fellow Citizens

Let me first of all congratulate Russell Matheson, the Mayor and Members of the Campbelltown City Council, Lisa Havilah, the Director and Drew Bickford, the Education & Publicity Officer of the Campbelltown Arts Centre for organising the Heritage Week Festival with the theme "Our Place in Space Under the Southern Cross".

The theme is most appropriate since 2009 is the International Year of Astronomy. I was privileged to have been invited this year to give a paper at the International Astronomy & Culture Symposium organised by the International Astronomical Union and UNESCO at the UNESCO Headquarters in Paris in January this year to commemorate the start of the International Year of Astronomy. I bring greetings from the President of the International Astronomical Union to the people of Campbelltown. I hope you enjoy looking at the night sky this year. We have arranged with the assistance of the local Macarthur Astronomical Society to run a series of astronomy nights (weather permitting) at the Observatory at the UWS Campbelltown Campus for people living in the Macarthur area and the Western Sydney region. We have also arranged for astronomy nights to be held at the Observatory at the Penrith Campus with the assistance of the local astronomical society in Penrith.

We are probably the most fortunate people in our solar system, because we live directly under the centre of one of the most beautiful galaxies in the Universe – our home galaxy, the Milky Way. I say in the solar system because we are the only intelligent beings to live in this corner of the universe. Whether there are other intelligent beings in the universe is a question that has intrigued human beings for millions of years. But it is only in the 2nd half of the twentieth century that the question of whether there is life elsewhere in the universe has been tackled systematically by astronomers and scientists with the use of modern sophisticated scientific instruments. The scientists have taken over the endless debates of philosophers of whether there is life elsewhere in the universe. The question has now become the domain of scientists and astronomers and only they will be able to answer this question within the next fifty years. I will talk further about this at a public lecture here tomorrow.

The Southern Cross was first observed by the Europeans and made known to astronomers and the general public in Europe only in the sixteenth century. In fact, it was Andreas Corsali, a Florentine traveler who sailed with a Portuguese expedition to Goa in India in 1515, who described a distinctive constellation of stars as a cross. It is understandable for him to have seen the kite shaped constellation of stars as a cross – the cross of Jesus Christ - since he came from a Christian background. It was variously named on celestial maps as 'cross", 'crosiers', 'crucero' or 'crux'. This is just one interpretation of this group of kite like stars. Other cultures see them in a different light. In South Africa, the Zulu people who have observed the Southern Cross long before the Europeans saw them called this pattern of stars the Tree of Life because the stars showed them how to find their way in the bush at night.

It may come as a surprise to you that the Aboriginal people of Australia have been observing the night sky for over 40,000 years. It may also come as a surprise to you that Australia's first social cultural astronomer was an Aboriginal woman by the name of Yarrum Parpur Tarneen of the Moporr group in Victoria. She was the daughter of the chief of the Moporr group. In the 19th century, she taught her people and some enlightened European people and anthropologists who cared to know about Aboriginal culture about the night sky from an Aboriginal perspective. She told them about the various stars and constellations and how they were part of their cultural heritage. Over the thousands of years the Aboriginal people of Australia developed a rich tradition of social cultural astronomy. Their stories of the night sky were and still continue to be used for the transmission of their culture and social history, for codes of conduct and ethical teachings, for telling the change in the seasons, and the activities associated with this change in different climatic conditions and for the seasonal food supply and the availability of foods. For example, when the Aborigines of Arnhem Land saw the red star Arcturus in the sky they knew it was time to harvest the spike rush while to the Boorong Aborigines of Victoria the star represented the spirit of Marpeankurrk, who showed them where to find the pupa of the wood ant while the star Vega showed them where to find the eggs of the Malle hen. In the desert regions the appearance of the Pleiades informed the Aborigines that it was time to have a feast of young dingo pups. In the domain of ethical and moral teachings the sky people enacted what was considered taboo

in the social culture of the Aboriginal people. Thus, the red star Aldebaran illustrated a warning to male Aborigines as to what happens to adulterers. Unlike the Jewish people who were told in the Ten Commandments that were handed down by their God to Moses not to lust after another's man's wife, the Aborigines read a visual story about Aldebaran in their commandments in the night sky which serves a similar function.

Long before the great English physicist, Isaac Newton had told us that what happens on the Earth is reflected in the heavens the Aboriginal people of Australia had enunciated this law in the their social cultural astronomy. The only difference between these two views of the universe is that in Newton's case it was formulated in mathematical terms and scientific theories that had to be verified or falsified by observation and experimentation. In the case of Aboriginal astronomy the view of the universe and our place in it is stated in social cultural terms and it is not amenable to falsification by the traditions of science. The Aboriginal people had given names to the various stars and constellations which today bear European names. Their astronomical culture has been swept away and in the primary schools in NSW and the rest of Australia the social cultural astronomy of the Aboriginal people is not taught at all. The pupils are taught about European astronomical folklore. They know about Orion (the Hunter) and the Pleiades (the daughters of Atlas) from the point of view of a Eurocentric culture but not from an Australian Aboriginal cultural perspective. I lay the blame on the makers and designers of the curriculum that is taught in primary schools in NSW and Australia. In the 21st century we are supposed to be living in an inclusive society.

According to the late and well known Aboriginal poet Kath Walker (Oodgeroo Noonucal) the Aboriginal people had named the kite shaped group of stars Mirabooka. As a young girl she knew the stars as Mirabooka. Mirabooka was a good man and looked after his people when he lived on Earth. However, when he died the Great Spirit took him and placed him in the sky so that he could keep a watch over his people for ever. So when the Aboriginal people look up at the night sky and see the Southern Cross they know that Mirabooka is looking after them. When the first Europeans invaded Australia, according to Noonucal, they called it the Southern Cross. They not only took their lands but also stole their night sky.

Australian Aboriginal people tell many stories about the origin of the Southern Cross. The stories vary according to whether they live inland or near the coast. The coastal stories usually involve fish or fishing which is a daily activity in their lives. Thus, at Yirrkalla in Arnhem Land, the Southern Cross is a stingray that is constantly chased around the sky by a shark. The shark is represented by the Pointers, the stars Alpha and Beta Centauri.

If you had lived in Campbelltown in the 19th century you would have seen over 2000 stars in the night sky with your naked eye. You would also have seen the magnificent Milky Way spread out like a huge white river in the sky overhead and the two fuzzy patches of light which we call the Magellanic Clouds. Furthermore, you would have not only seen the five stars of the Southern Cross shinning extremely brightly but also have counted over 200 stars within a circle of radius ten degrees centered on Alpha Crucis, the brightest star in the Southern Cross. In fact, when I first built the Observatory at the UWS Campbelltown Campus in year 2000 you could still see parts of the Milky Way galaxy, and still count over 100 stars around the Southern Cross. With the rise of several housing estates around the UWS campus and new housing developments that are still taking place the level of light pollution has increased tremendously. Today, only a faint glow of the Milky Way is left in the night sky over Campbelltown and the number of stars around the Southern Cross that you can count with your naked eye has dropped down to less than 50. At Observatory Hill in Sydney it is far worse than this. You will be lucky to count more than 20 stars around the Southern Cross. In fact, the Southern Cross is all but washed out. If the level of light pollution continues to increase the way it is at Campbelltown, in the next fifty years we will be lucky to see 10 stars around the Southern Cross and the Southern Cross itself will be quite washed out. Kath Walker complained that the night sky had been stolen from her people. What we have done ourselves over the last 100 years is that we have stolen the night sky from our children, grand children and great grand children. Can we be persecuted for having stolen the night sky from future generations of children in Campbelltown or NSW or Australia? I must leave you to answer this question.

Arising from the Earth Hour program and to bring to the attention of the public the rapid loss of our night sky due to increasing light pollution, I proposed last year to the National Trust of Australia (NSW) that we should classify the sky over the state of New South Wales as part of our cultural and national inheritance for all Australians. The sky is one part of our environment which has been shared and continues to be shared by all cultures in all periods of human history. In terms of the Heritage Trust the sky is significant for its aesthetic, historic, scientific and social values. I am pleased to inform you that the listing of the sky as part of our natural national heritage was approved in 2008 by the Natural Trust of Australia (NSW). This is the first time in any country in the world that the sky has been listed as part of our natural national heritage. We are all custodians of the sky and I hope every one of us will look after our most valuable national heritage and asset for future generations of Australians.

Thank you.

Dr Ragbir Bhathal is an award winning writer and astrophysicist who lectures and carries out astronomy research at the University of Western Sydney. He has published six books on astronomy. He carries out the only dedicated search in the southern hemisphere for ET

in the optical spectrum. His latest book is Australian Backyard Astronomy which was published by the National Library of Australia. He was awarded the prestigious CJ Dennis Award for excellence in natural history writing and the Nancy Keesing Fellowship by the State Library of NSW.