

The Interrogation That Never Ends

50th Anniversary of the Professor Harry Messel International Science School

Chief Justice Robert French AC
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Your Excellency, Professor Messel, Professor Bedding, Mr O'Connor, distinguished guests, ladies and gentlemen. The January 1962 edition of the *Reviews of Modern Physics* carried a paper entitled 'Simple Groups and Strong Interaction Symmetries'. The paper began with an observation that has a universal resonance for physicists:

One of the most natural questions when one looks at the mass of uncorrelated data on elementary particle interactions is whether a systematic pattern is emerging from this complexity.¹

Fifty years, a Standard Model and a Higgs boson later, but so far, no Super Symmetry, we find ourselves asking essentially the same question. Is there a systematic pattern emerging from this complexity? The fact that we still ask it is cause for celebration. It is the never ending interrogation of the universe by science. When the questioning stops the science stops.

In the same month in 1962 in which the *Reviews of Modern Physics* published the paper on mathematical groups and elementary particles the first lectures were delivered at what was to become the Professor Harry Messel International Science School. Tonight we celebrate together the continuity of that institution which was begun at this university to ensure that new generations of gifted young Australians and young people from other countries will be inspired to continue the interrogation which is central to the scientific endeavour - the search for pattern in apparent disorder, for simplicity in apparent complexity.

¹ R E Behrends et al, 'Simple Groups and Strong Interaction Symmetries' (1962) 34C1 *Reviews of Modern Physics* 1, 1.

The history of science shows that that interrogation has led to applications and new knowledge which bring benefits and risks to our society. At a more profound level, the answers to our questions, although they are always provisional, extend our awareness of the world, the universe around us and our place in it. That is a truth which was enunciated by the 17th Century philosopher and mathematician Blaise Pascal in a passage which I quoted to the 2009 International Science School ('ISS') scholars. He referred to man as the 'thinking reed' and said:

Through space the universe grasps and engulfs me like a pinpoint; but through thought I can grasp it ... all our dignity consists, therefore, of thought. It is from there that we must be lifted up and not from space and time, which we could never fill. So let us work on thinking well.

It is a privilege to be able to speak briefly tonight on the fiftieth anniversary of the Professor Harry Messel International Science School. Beyond that, it is a special pleasure because of my own experience as one of two students from Western Australia who were given scholarships to attend its precursor, the Science Summer School in January 1964.

The title of the lectures that year was 'Light and Life in the Universe'. Professor Messel and Professor Stuart Butler delivered six lectures on atomic structure, on gravitational fields, the origin of the solar system, the evolution of the sun and of the earth. Professor Ronald Bracewell from Stanford University told us of the possibilities of life in other parts of the galaxy. Professor Martin Ycas introduced us to the idea of molecular biology, concepts of reason and purpose in biology and the operation of feedback mechanisms. He spoke to us of the mystery surrounding the origins of life on earth, the limits of science and of the personalities that construct science as 'of necessity outside science'.

The principal lecturer in 1964 was Professor James Watson who with Francis Crick and Maurice Wilkins had won the Nobel Prize for Physiology and Medicine two years earlier in 1962. They won their prize for their determination of the complementary double helix structure of the DNA molecule. In a series of engaging lectures Professor Watson introduced us to a molecular perspective on the living cell and the function of macro-molecules within it. Step by step he took us through the

processes by which macro-molecules are constructed and the ways in which the structure of the fundamental molecule of organic life, the DNA molecule, was discerned.

Memories of things said and done nearly half a century ago fade and change with the passage of the years. For me one image remains vivid. It is Professor Harry Messel delivering a passionate speech about science education, holding up a large blue text book and saying provocatively:

Show me a young man in ten years' time who doesn't have a science education and I'll show you a young man who needs to be locked up for his own protection.

Today he would no doubt say 'show me a young person'. The fact is that in that year, as in 1962 and 1963, about one-third of the students attending the lectures were girls. In 2011 nearly fifty per cent of those in attendance were girls.

I sometimes reflect upon that warning. It is not so much perhaps individual men and women who are at risk but our whole community if it discounts or dismisses the advantage of an educated awareness of scientific culture and method and of the promise and limits of scientific endeavour and its applications.

A politician once told me that it is the literate rather than the numerate who run the world. My answer to that is that ignorance of scientific culture and method is a kind of social illiteracy. It can have real world consequences. It is true that policy decisions affecting our societies sometimes involve difficult normative choices, the balancing of risks and benefits and of competing legitimate interests, claims and points of view. Science cannot make those choices for us. It cannot strike the balance of risk and benefit or decide whose legitimate interest or point of view will prevail and to what extent. But when decision makers discount relevant science or are blinded to it by ideology, dogma, prejudice or self-interest there is a risk that their decisions will be bad ones.

It is a matter of some importance therefore that the International Science School inspires not only new generations of scientists but also a lifelong awareness of the importance and promise of science among young people who may not become scientists but may become leaders in our country - perhaps called upon one day to make the difficult kinds of decisions that science cannot make but which can be informed by an awareness of the relevant scientific issues.

I became aware that I was not one of those ISS students destined for a career as a scientist when after delivering a paper to fellow physics students at the University of Western Australia in 1967 on the same topic as the *Reviews of Modern Physics* paper of 1962, I was told by the Dean of Science:

You express yourself magnificently but I am not sure you know what you are talking about.

So encouraged and qualified I enrolled at the Law School. Fortunately I am not the only former ISS student to defect to the legal profession. Indeed the Immediate Past President of the University of Sydney Physics Foundation, an ISS alumnus, Trevor Danos, is a lawyer who has never lost his love of science and in particular, physics. He has written a book about the ISS, *The Pursuit of Excellence*, whose publication was timed to coincide with this anniversary.

In celebrating fifty years of the ISS, we celebrate a heritage which enriches our society in perhaps more ways than were imagined when the ISS was established. I congratulate its founder, Professor Harry Messel, the University of Sydney and the Physics Foundation and its supporters for their continuing commitment to this exceptionally important activity.