

Acceptance Speech of  
**PROFESSOR SIMON KIRWAN DONALDSON**  
Co-Winner of the 2006  
King Faisal International Prize for Science  
Monday 3 April 2006 (5.3.1427H.)

Read by His Excellency  
Professor Abd Allah M. Al-Rashed  
Rector of King Khaled University

Your Royal Highness, Prince Sultan Ibn Abd Al Aziz  
Crown Prince, Deputy Premier,  
Minister of Defense and Aviation and Inspector General  
Your Highnesses  
Your Excellencies  
Distinguished Guests

Dear Friends,

I am honoured to be a co-recipient of the King Faisal International Prize for Science for 2006, and I must offer my sincere apologies that exceptional personal circumstances prevent me from attending the award ceremony. The King Faisal prizes extend across a great swathe of intellectual endeavour, and I am truly humbled to join the pantheon of recipients of the award and particularly, to be numbered alongside the previous winners in the field of Mathematics; all of whom scientists of the utmost distinction. I know that the prizes reflect the evaluations of experts from the whole mathematical community, and I am deeply touched by their appreciation of my work. At the same time, I am keenly aware of the huge number of wonderful mathematicians around the world, often working in difficult circumstances, whose dedication and love for their subject drives their work on without the encouragement and good fortune of distinctions such as these.

The philosophical question of whether mathematics is discovered or created has long been debated, but either way the body of Mathematical ideas and knowledge---product of countless minds---stands as a vast and many-faceted monument to humanity. Simplifying greatly, one can divide the subject into three parts. Geometry: that is, ideas stemming from our intuition about physical space. Algebra: that is, ideas of patterns and symbolic manipulation. Analysis: that is, ideas involving magnitudes and infinite processes. These divisions apply both to the technical content of the different branches, but also to the modes of thought employed. One precious thing I learnt from my doctoral studies under Sir Michael Atiyah (winner of the King Faisal prize in 1987) is the value of mixing up these different branches of the subject, and seeing how the different strands interweave and interact. From Sir Michael too, I learnt the importance of searching for the essence of things: the right way of viewing a problem from which the answer emerges harmoniously and beautifully. Later, I worked for a time closely with Dennis Sullivan (winner of the King Faisal prize in 1994), and from him I learnt more about analysis and the meaning of space, and about driving to break open a hard problem. So my own work, I like to think, studies (in one small corner of the huge edifice of Mathematical Science) the interaction between these three great branches: algebra, geometry and analysis and mixes the search for the underlying essence of things with a focus on specific problems.

One distinctive feature of Mathematics, among the other sciences, is the importance of the history of the subject. Mathematicians are, I think, more aware of this history than scientists in general and it is more accessible to them. Often, a mathematical paper written 50, 100 or even 200 years ago can be read as easily as something appearing today. So, here, it is proper and a pleasure to recall the contribution to our subject made by Arabic Mathematicians. Most notably, of course, this applies to the vast domain of algebra—a creation of the Arabic school. But we find also in the work of these pioneers the vital idea of mixing up the different lines of thought.

I would like to conclude by saying that it is a particular honour for me to share the Prize with Professor Narasimhan. The renowned paper of Narasimhan and Seshadri, from 1965 (which throws a bridge between a part of geometry based on algebra and a part based on analysis) was one of the first papers I studied as a graduate student. Over the past two decades a great part of my work has been driven by the desire to extend the wonderful ideas they discovered in a variety of directions, an activity which continues still and will likely provide challenges for future generations of mathematicians.

Thank you.