Acceptance Speech of

PROFESSOR MUDUMBAI SESHACHALU NARASIMHAN

Co-Winner of the 2006

King Faisal International Prize for Science

Monday 3 April 2006 (5.3.1427H.)

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,

It is a great honour to be awarded the King Faisal International Prize for Science, and to be included in the company of outstanding mathematicians who have previously received this prize. I am particularly pleased to be sharing this year's prize with Professor Donaldson, for whose work I have great admiration.

From ancient times, India has had a very strong tradition in mathematics. Actually many mathematical fields of current interest, especially Algebra, owe their existence and development to Indian and Islamic mathematicians, and the interactions between them. I am therefore particularly happy to be here, and I hope that future years will see a revival of this great tradition of fruitful scientific interaction between the two communities.

In more recent times, mathematics in India was relatively dormant, though there was a resurgence of Indian mathematics in the last century, starting with the contributions of Ramanujan. However, it was only after India's independence in 1947, that a systematic programme was initiated to promote mathematical research. I joined the Tata Institute of Fundamental Research in Bombay as a student in 1953, where we were introduced to new areas of mathematics and had access to some of the latest scientific literature. Moreover, many famous mathematicians visited the Tata Institute and taught at the Tata Institute. Almost overnight, Indian mathematics ended its period of relative isolation, and students like me learnt to identify problems at the forefront of current mathematical research. Soon, research of a high level began to emerge from our group, and the Tata Institute became acknowledged as a leading center of mathematics, proving that (with proper planning, and financial support) it is possible for developing countries to produce outstanding research. I would like to think of this prize as not only a personal honour, but also a recognition of the achievements of my generation of Indian mathematicians, and I hope that it will inspire young students in developing countries to pursue a career in scientific research.

People often ask me why one should study mathematics, and whether mathematical research is a worthwhile pursuit, especially in a developing country. Mathematics has two functions: it is a source of intellectual pleasure and beauty, but it is also useful for counting, measuring and predicting, both in scientific research, and in everyday life. On the occasion of a mathematics conference held at the Tata Institute, Jawaharlal Nehru, India's first prime minister, sent us a message, that summarizes beautifully the essence and function of mathematics:

"… it is increasingly recognized that [mathematics] is of high importance in scientific developments of today. [It] has widened the horizon of the human mind tremendously and has helped in the understanding, to some extent, of nature and the physical world. It is the vehicle of exact scientific thought. "

My own work has been in pure mathematics, especially in the fields of Analysis, Differential Geometry and Algebraic Geometry. My studies included different aspects of moduli of vector bundles. I was initially attracted towards this, and similar problems, entirely because of their intrinsic mathematical interest. However, it has later emerged that these problems are intimately connected with gauge theory and conformal field theory, which play a significant role in theoretical physics. In the past two decades, I became more interested in the applications and relevance of these concepts in physics.

I also developed an interest in setting up institutional and academic structures that would help promote mathematics, especially in developing countries. I have done what I can to help foster such efforts, with the help of the International Mathematical Union, and also at the Abdus Salam International Centre for Theoretical Physics, where I spent ten years. I continue to be interested in efforts to train young mathematicians and to promote international exchange and cooperation, and I hope that my this award will help further these endeavours.

I am indebted to many individuals who have shaped my career, particularly my mentors, C. Racine, K. Chandrasekharan and Laurent Schwartz and my collaborators and close friends, C.S. Seshadri and S. Ramanan. I am also grateful to P.P. Divakaran, who first introduced me to modern physics, and to the many collaborators and students, from all over the world, who have enriched my scientific life. Finally, I would like to thank my family, especially my wife Sakuntala, for the support they have given me.

Thank you.