

**Speech by Professor Shih Choon Fong
President, National University of Singapore
University Awards 2006
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OPENNESS TO IDEAS, OPPORTUNITIES, CHANGE

Pro-Chancellor Dr Andrew Chew

Pro-Chancellor Mr Ngiam Tong Dow

Members of NUS Board of Trustees

Distinguished Guests

Friends and Colleagues

Ladies and Gentlemen

Introduction

Good evening. Welcome to University Awards 2006.

Our annual University Awards represent our highest tribute to excellence in education, research and service. This evening, we are recognizing and honoring the accomplishments of eight exceptional members of our community.



Our Outstanding Educator Awards have been presented to Associate Prof Chang Tou Chuang and Assistant Prof Lakshminarayanan Samavedham. We applaud their passion for engaging minds and inspiring curiosity in our students' personal exploration and discovery of knowledge.

Our Outstanding Researchers – Profs Lee Eng Hin and Lee Hian Kee – have impacted and advanced the boundaries of knowledge. They have positioned NUS at the forefront of their particular areas of expertise.

We also acknowledge our Young Researchers – Assistant Prof Leonard Ang and Assoc Prof Mark Breese – for making an excellent start in their endeavors to push the frontiers of knowledge. We cheer them on to persevere.

The recipients for the Outstanding Service Award – Prof CC Hang and Emeritus Prof Wong Hock Boon – have distinguished themselves by their sustained contributions to community and nation. We salute their deep sense of mission and duty in serving the University and society.

On behalf of our NUS community, I extend our warmest congratulations to our 2006 University Awards recipients. You have set benchmarks of excellence for our community. We take pride in your perseverance, dedication and passion to excel.

The accomplishments of our award recipients – past and present – have helped raise our University's global standing. They inspire our community in our unrelenting quest for excellence in creating, imparting and applying knowledge.

Turning Ordinary Talents to Extraordinary Talents

This being our Centennial year University Awards, and the first one after corporatization, perhaps this is an occasion to be bold and challenge convention.

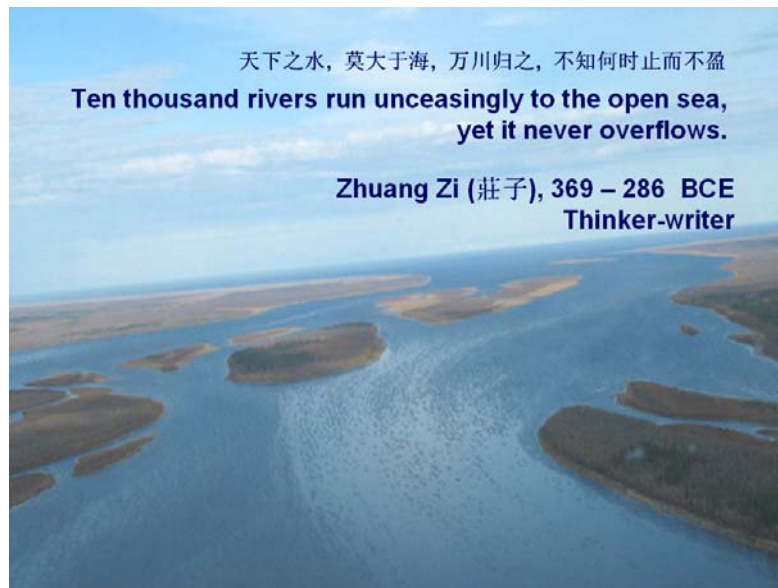
At the heart of our ever-widening circle of excellence, are our people – faculty, staff, students and alumni. They are our vital resource. Extending this idea further, we should see our people as investing their intellectual capital, and a good part of their lives with us. How can NUS do its part to help its people realize good returns on their intellectual capital and prime years?

At MIT some years ago, I had an interesting dinner conversation with a distinguished Indian scientist. He said: "The genius of the American education system is turning ordinary talents into extraordinary talents. What about the Indian education system?" Smilingly, he said: "Turning extraordinary talents into ordinary talents." In the same breath, he mentioned China. He was thinking of the billions of Indians and Chinese in Asia, and the vast potential not realized.

I have been reflecting on his observations. My hope is that when I meet him again, I can say to him that NUS is becoming a place where ordinary talents are turned into extraordinary talents, and extraordinary talents into stars.

This evening, I would like to share some reflections with you.

Openness to Ideas, Opportunities and Change



Let me begin with a saying attributed to the Chinese thinker Zhuang Zi. The saying goes like this:

“No body of water on earth is larger than the open sea. Ten thousand rivers run unceasingly to the open sea, yet it never overflows.”

Zhuang Zi’s words of wisdom two thousand years ago are even more relevant in today’s world, and in particular to this occasion. Like the open sea, a community that welcomes talents and ideas has no limits. It will not overflow.

To become a place where talents are transformed and individual potential realized, NUS needs to embrace openness – to ideas, opportunities and change. With openness, we can build a nurturing and stimulating environment where the strengths of individuals synergize and multiply manifold – transforming ordinary talents into extraordinary talents, and extraordinary talents into stars.

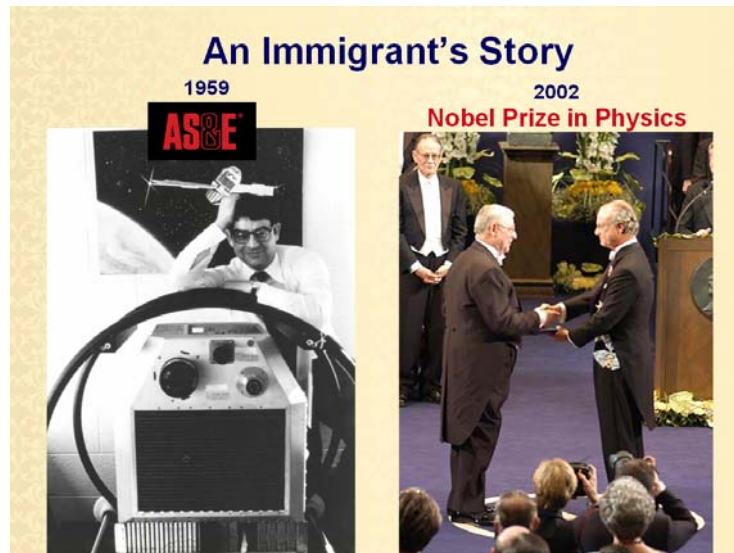
Let me now offer two examples.

An Immigrant’s Story

The first is a story of an immigrant – Dr Riccardo Giacconi. He was a pioneer with American Science and Engineering (AS&E), a company I worked with during my graduate student days at Harvard and in my post-doctoral years.

AS&E was an MIT start-up set up in 1958 to develop X-ray telescopes to study the stars and outer space. A year later, AS&E hired Italian-born Giacconi to lead its space research activities. Giacconi was then an unknown physicist who, after a year as an assistant professor at the University of Milan, had sailed to the US on a Fulbright Fellowship three years earlier.

Giacconi's early years in the US were tough. He spent two years in Indiana, before moving to Princeton where he and his collaborators "built equipment, worked like fiends, analyzed data, and declared failure". Then, AS&E made him a job offer. Describing his situation then, he said: "I felt I had not learned any useful skills while working in Milan, Indiana, and Princeton. I desperately wanted some kind of permanent position where I could learn a trade". Open to the opportunities at AS&E, he moved north to Cambridge, Massachusetts.



AS&E was then engaged in basic research in X-ray astronomy, largely for NASA and the US space program. Giacconi's work at AS&E led to the discovery of black holes, which until then had been hypothesized but never seen. He was also the first to prove that the universe contains background radiation of X-ray light. Little wonder that he's also known as "The Father of X-ray Astronomy". Giacconi's stellar work at AS&E won him the 2002 Nobel Prize in Physics.

Today, AS&E's X-ray inspection systems are used by governments and businesses around the globe to enhance security in travel and trade.

AS&E is now listed on the NASDAQ Stock Exchange. When I looked up its share price last week, it was about US\$85. Over the past 10 years, its market value has grown nearly 20 times, and revenue up by more than 10-fold.

Giacconi's story is about openness to ideas, opportunities and change. Starting in an area many thought to be blue sky research – star-gazing – Giacconi had the open mind to see and explore the possibilities beyond the boundaries of his research. Along the way, he reaped abundant financial and intellectual rewards.


Who says blue sky research doesn't pay? In fact, Giacconi's story shows how blue sky research can be turned into stellar achievements and winning products. It takes an open mind to see the opportunities, whether in breaking new ground on earth, or even in outer space. Closer to home, AS&E's first *Z Backscatter Portal* system for screening vehicles and cargo was put into operation at the Jurong Island checkpoint in 2004.

Challenging Conventional Wisdom

Breaking new ground often involves putting forth ideas that challenge conventional wisdom. Questioning conventional wisdom obviously entails risks. It takes courage. If you're wrong, you will be hearing: "I told you so. You wasted your time." Of course, should you be right, a University Award may be in sight. You may even win a Nobel Prize. This is the story of Dr Barry Marshall, who won the Nobel Prize in Physiology or Medicine last year.

Barry Marshall exemplifies an individual who dares to take risks on new ideas, and perseveres to see them through.

Challenging Conventional Wisdom



When I was in medical school, I was given the impression that everything had already been discovered in medicine.

It must have been the way it was taught.

**Barry Marshall
2005 Nobel Prize in
Medicine or Physiology**

For generations, it had been widely accepted that chronic stomach ailments like ulcers and gastritis were caused by stress, spicy foods and excess stomach acid. When Marshall first postulated that the *Helicobacter pylori* bacteria were responsible, most experts dismissed the idea outright.

Back then, the conventional wisdom was that bacteria could not survive in the stomach, an environment acidic enough to corrode even metals. For over a decade, Barry Marshall was the subject of ridicule by the medical fraternity and health industry. Radical ideas are not easily digested.

To prove his radical hypothesis that bacteria – not stress – cause stomach ulcers, Barry Marshall did a dramatic self-experiment, that was probably traumatic for his family. He swallowed a potion containing billions of *H. pylori* bacteria. About a week later, he started vomiting and suffering other painful symptoms of gastritis, the precursor to stomach ulcers. Treated with antibiotics, the bacteria and his symptoms disappeared after two weeks. He had made his point.

Because of Barry Marshall, ulcer patients who were once condemned to taking medicines for life can now be cured with a single course of antibiotics. Two decades after his courageous gulp, Marshall received the Nobel Prize.

Like Giacomini, Marshall is going beyond excelling in research to technology transfer. A prime mover in Ondek Biologic Delivery Systems, Marshall is exploiting the unique characteristics of *H. pylori* to deliver vaccines or medicines continuously. This start-up company is looking to develop a *H. Pylori* Platform Technology, or HPPT in short. This technology will use genetically modified *H. pylori* bacteria to deliver vaccines against diseases such as the Avian flu, hepatitis C, and HIV, as well as an appetite enhancer for cancer patients.

Beyond Conventional Mission – Integrating Education, Research and Service

Over the past weeks, the media has highlighted the government's push for the next big thing for Singapore's R&D landscape – world-class integrated research centers, or IRCs, not to be confused with the much discussed IRs, or integrated resorts. The aim of IRCs is to integrate graduate education, research and technology transfer across diverse fields of science and technology. IRCs are an exciting model of openness – they promise to promote cross-fertilization of ideas as well as to build bridges with industry players.

Integrating Education, Research & Service

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Integrated research models for S'pore

Tony Tan highlights Swiss centres which conduct studies relevant to industry

By Neo Hui Min
Straits Times Europe Bureau
in Zurich

DEVELOPING research centres which go beyond research to include education and transfer of technology will be the next key focus for Singapore's National Research Foundation (NRF).

NRF chairman Tony Tan told reporters on the last day of his week-long visit to Switzerland that integrated research centres such as the Paul Scherrer Institute (PSI) in Switzerland were models for Singapore.

"Switzerland finds this integrated research centres approach more suitable for small countries. I think there are lessons to learn from this," he said.

Like Singapore, he said, Switzerland is a small country which does not have the luxury of farming out research and development to different types of institutions, as is the practice in large countries such as Germany.

At the PSI, part of the prestigious Swiss Federal Institute of Technology (ETH) group, profes-

Dr Tony Tan, Chairman NRF Board & Prof Alexander Zehnder, President ETH Board, Switzerland

Dr Tan noted that Singapore already had good centres such as the Genome Institute, but the key now is to "build bridges" between scientists of different disciplines as well as industry players.

He said: "We have got to find ways to integrate the work at the Genome Institute with the university, and also make them more relevant to the industry."

"What NRF will be doing now will be to study and develop a number of world-class institutes in Singapore, first with local universities and hopefully with co-operation of leading universities like ETH, either on their own or in collaboration."

However, developing integrated institutes will take time. The universities in Singapore were started as teaching institutes, noted Dr Tan, and only began building research capabilities in recent years.

The NRF, which was set up last year, is backed by about \$5 billion in funds. It is responsible for implementing the three research thrusts identified for Singapore — interactive and digital media, environmental and water technology, and biomedical science.

To explore other areas for collaboration, Dr Tan will visit institutes such as the Massachusetts Institute of Technology in the United States and Israel's Weizmann Institute and Technion

Our University Awards recognize excellence in education, research and service. As NUS embarks on its second century in the innovation-based era, let us embrace a more encompassing view of service. It entails efforts that can add or better still, create value to community and society; this includes technology transfer as well as entrepreneurship that leverages on our core competence in education and research. This is service at its best.

Our University Awards recipients symbolize the wealth of talent in our midst. Perhaps they can take the lead in integrating education, research and technology transfer at NUS.

With the 2006 FIFA World Cup round the corner, let me close with a soccer analogy. For any team to have a shot at winning the World Cup, good coaches are necessary to turn ordinary talents into extraordinary talents, and to turn extraordinary talents into stars.

A university community is made up of many teams. To build winning teams for the global arena, we need a supportive environment as well as good coaches. Recipients of the Outstanding Education, Research and Service awards today – you could help as coaches for our NUS teams.



Friends and colleagues, as we pursue excellence in education, research and service, let us embrace openness to ideas, opportunities and change. Let us endeavor to transform talents into extraordinary talents, and extraordinary talents into stars.

Thank you.