Professor YAU Shing-Tung

Citation

Professor Yau Shing-Tung's work has led us to a better understanding of theoretical physics and mathematics, and indeed of life itself. He has been driven by a fascination for the beauty of nature, which is expressed not only in his famous mathematical equations but also his deep appreciation of poetry and philosophy. That such talent and drive have emerged from a childhood marked by sadness and hardship only adds to the astonishment at his achievements.

Prof Yau was born in Shantou, China in 1949, the same year his family moved to Hong Kong. His father was a professor, but his limited income was stretched by the demands of feeding eight children. Food was scarce and there was no electricity or running water. Prof Yau ran in the streets with the village children and, in his early years, did not display any great academic skill. It was not until he attended Pui Ching Middle School that he even showed an interest in mathematics. But it was there that the pin dropped. Prof Yau became fascinated with the subject, particularly plane geometry. He saw great beauty in the simplicity and rigor of mathematics and hungered for more information than his school could provide. He read mathematics books in bookstores, the family being too poor to buy them, and admits he did not understand all he read. So he would re-read them several times. Some texts he did not fully understand until he was in university. Nonetheless, he was inspired to start creating his own problems.

The catalyst for his studies was closely linked to events at home. Prof Yau's father and his students would hold long discussions on philosophy. This exposure made him feel at home with the axiomatic approaches that he later realized were central to mathematics. Sadly, however, his father died when he was 14. It was the greatest shock of his life and

created additional financial hardship for the family. But Prof Yau's mother was determined that he continue his studies, and his father's friends and students helped out.

Prof Yau delved deeper into the complexities of his beloved geometry throughout the rest of his high school years, largely through self-study. At the Chinese University of Hong Kong, he began to meet the teachers, and ideas, that would propel him towards becoming a world-renowned mathematician. He was recommended for graduate studies at Berkeley before even finishing his degree in Hong Kong. There, he came under the wing of the brilliant mathematician, Prof Shiing Shen Chern.

Prof Yau next went to Stanford, where his research ultimately led him to make an astounding discovery. He had become interested in the relationship between geometry and general relativity and, at a conference on geometry, he presented some of his preliminary ideas disproving the Calabi Conjecture regarding curvature of space. These ideas were accepted by his peers, but two months later Prof Calabi himself contacted Prof Yau seeking clarification. Prof Yau realized to his horror that there were serious gaps in his analysis. The rest, as they say, is history: His subsequent work on the problem led him to solve the Calabi Conjecture. The Calabi-Yau Manifold has proved to be vital in theoretical physics and mathematics.

Prof Yau's many accomplishments have been well recognized. In 1982 he became the first and only ethnic Chinese to receive the Fields Medal, regarded as the Nobel Prize of mathematics. Among his many other awards are the Crafoord Prize, presented by the Royal Swedish Academy of Sciences in 1994, and the National Medal of Science, the highest award

given in science in the United States, which he won in 1997. He is Chair Professor of Mathematics at Harvard University and Director of the Institute of Mathematical Sciences at Chinese University.

His fascination with the links between geometry and physics has led Prof Yau to be very active in fostering interdisciplinary research, especially in the domains of physics, biotechnology and business and industry. His efforts were recognized in 2003 when he received the International Scientific and Technological Cooperation Award from the State Council for his contributions to science and technology in China.

Prof Yau also nurtures young mathematicians, organizing an annual enrichment program for high school students to work with great masters. As he has himself said: "Meeting great scientists is a necessary step towards becoming a first-class scientist." The young people in his program must consider themselves very fortunate indeed to meet not only a great scientist, but one of the greatest.

Mr Pro-Chancellor, I have the honor to present to you, on behalf of the University, Prof Yau Shing-Tung, renowned mathematician and winner of the 1982 Fields Prize, for the degree of Doctor of Science *honoris causa*.