ANTHONY JOHN GRENVILLE HEY DCL

Mr Chancellor,

"All the world's a stage … and one man in his time plays many parts". Of no-one is this truer than of Professor Tony Hey. He does indeed stride the world stage, and has successively been at the forefront of particle physics, computing science, research programme direction, the popularization of 'hard science', and the stimulation of innovation in the world's foremost software company.

Notwithstanding his thirty-one years of service to the University of Southampton in a succession of ever more senior academic posts, Tony's most recent appointment (as Corporate Vice President of Technical Computing at Microsoft) actually marks the *sixth* time he has set up camp in the United States: one gets the impression that only the QE2 might exceed his record for round-trips between Southampton and the USA!

The roots of his long-term fascination with America were laid immediately after he completed his PhD at Oxford, when he took up a Harkness Fellowship at Caltech to work at the forefront of particle physics with two Nobel Prize Winners: Richard Feynman and Murray Gell-Mann. The spirit of openness, drive and adventure with which his American colleagues were imbued made a lasting impression on Tony.

After leaving the USA, Tony spent two years in Geneva as a Research Fellow at CERN, the European Organization for Nuclear Research. Later to become the birthplace of the worldwide web, in the early 1970s CERN was rapidly expanding its unique facilities for probing subatomic particles, and Tony worked in a team which developed the theoretical under-pinning for much of modern quantum physics.

Following a highly successful decade of research and teaching in Theoretical Physics at Southampton University, Tony bravely decided to switch disciplines to computer science. Few career academics have the courage to make such a switch: it entails leaving your established reputation behind, to become a newcomer in another scientific circle. It means jumping to a lower rung on a parallel ladder of learning; you might trip, or even miss the other ladder altogether …

The inspiration for this courageous move came during a second sojourn at Caltech, where in 1981 Tony attended a colloquium by Carver Mead on the future of silicon chip technology. It was Mead's work which paved the way for what is now known as "Moore's Law", which states that the power of microprocessors will double, and the costs of computation will be halved, every 18 months. This Law has borne the test of time, and its operation has transformed all of our lives. Tony was inspired to explore parallel computing technologies for large-scale scientific simulations. Three years later he was building one of the

world's first parallel supercomputers; two years after that, his transition to computer science was consummated in his appointment to a Chair in the Department of Electronics and Computer Science at Southampton. He subsequently became Head of this Department, before moving on to act as Dean of Engineering and Applied Science.

Oscar Wilde claimed that "Life imitates art". Many years later, in the light of new technology, Woody Allen opined that "Life doesn't imitate art; it imitates bad television". While it would not be fair to claim that Tony Hey's life has imitated either art or bad television, reflection on his *modus operandi* and accomplishments does call to mind the behaviour of a delocalised electron: a single entity which can change the properties and behaviour of a much larger system simply by its presence or absence; an entity which can move almost at the speed of light when confronted with a vacuum.

Tony has, in fact, long been accustomed to moving at great speed. For many years, he and his wife Jessie were both accomplished marathon runners, and their family holidays always include some strenuous outdoor exertion. His jet-setting lifestyle at one stage prompted Tony to calculate his average orbital velocity around the planet. Yet travel has not always been without hindrance. Seated on the platform at Reading station one day, engrossed in e-mails on his Blackberry, Tony glanced up to see his train arrive. He quickly jumped aboard. It

was only as the train began to pull out of the station that he looked out of the window to see his bag still standing by the side of the bench on the platform. After a momentary hesitation he pulled the emergency cord and brought the train to a screeching halt. It is testament to his powers of persuasion that he managed to convince the irate train staff that his actions had in fact spared them the hassle and cost of the security alert which an unattended bag would otherwise have caused!

Tony's transition from Theoretical Physics to Computer Engineering resembled the phenomenon of quantum tunnelling, in which, as explained by Tony's mentor Richard Feynman, "it is possible to sneak quickly across a region which is illegal energetically". So successful was Tony's 'quantum tunnelling' between disciplines that, in 2001, he was elected a Fellow of the Royal Academy of Engineering: an accolade which distinguishes him as one of the top 1000 engineers currently living. Given this stature, it is no surprise that it was to Tony Hey that the Engineering and Physical Sciences Research Council turned in the same year when they needed a champion for their ground-breaking £35M e-Science Programme.

Tony soon discovered that the starting point for this programme was essentially a blank sheet of paper. With great inventiveness, he weaved together the best ideas from the US and elsewhere, filled in the gaps, and created the blueprint for

the Grid, a network of computational research infrastructure which is now the envy of the world.

This year our University celebrates the 50th Anniversary of the establishment of our internationally-leading School of Computing Science. Thanks in no small part to the e-Science initiative led by Tony, computing science in this University continues to flourish ever more vigorously. The University hosts the North East Regional e-Science Centre, through which research funding of more than £20M has already placed the power of parallel supercomputing at the service of a wide range of research fields, extending far beyond computing science *per se* to embrace transport engineering, chemical engineering, neuroscience, human genetics, ageing and health, and even the analysis of dance in our Culture Lab!

In recognition of the outstanding contribution he has made in establishing the foundations for the quantum age in which we are now living, I now ask you, Mr Chancellor, to bestow upon Professor Tony Hey the Degree of Doctor of Civil Law, *honoris causa*.

Citation by Professor Paul Younger