

The Lamp of Knowledge:  
UCT Graduation Address 2014

Rodney Douglas

December 16, 2014

Chancellor, Vice-Chancellor, SRC President, Academic Staff, Graduating Students, Parents, Ladies and Gentlemen: Thank you for the honor that you have bestowed on me today, and for granting me the opportunity to address you briefly.

Let me say immediately, that I would not be standing here today were it not for the many contributions to my scientific success made by my students and collaborators. Nor would it be possible without the sound foundation provided by my parents, and my teachers at SACS, and UCT.

I acknowledge in particular my colleague Kevan Martin, also a graduate of UCT, with whom I have collaborated closely for over thirty years: First in various labs in Oxford, and later as co-founders of the Institute of Neuroinformatics at the Swiss Federal Institute of Technology and the University of Zurich.

I have been very fortunate in academic life. But my greatest fortune has been the amusing, sometimes cynical, but always creative and wise presence of my friends and colleagues.

It has been a brief 40 years since I was sitting in your seats at graduation, gazing upwards towards the venerable members of Faculty sitting here on the podium of this imposing Jameson Hall, and contemplating where the future might lead me.

Before that moment of graduation I had a very ambiguous relationship with this Hall. As an undergraduate, the thought of Jameson Hall evoked in me only the creeping dread of sitting amongst quiet rows of exam tables, with the barely audible scratchings of a hundred hurried pens on their exam books. That ambitious desire for success in the arcane world of the mind was thoroughly mixed with with the sensuous scent of jasmine wafting through the Jameson windows on the warm summer breeze, beckoning persuasively towards the more physical mysteries of the body! In short, throughout my undergraduate years, the Jameson hall symbolized for me for the unending battle between the demands of the mind and the flesh!

But finally, through the rites of graduation, the Jameson Hall brings another vision: The transformation from our intellectual youth into the larger process of our creative life. It also brings perspective. We emerge from graduation onto the solid steps of Jameson, and into the clear Cape sunlight. There we grasp how our education and experience at UCT has elevated us magically above the surrounding landscape of daily life. From this elevated place we may gaze across the distant

mountains of challenge, and be drawn inevitably towards the hinterlands of our professional lives.

It is a great privilege to study at UCT. It is surely one of the most beautiful and serene campuses that I have encountered. UCT gave me a very clear sense of foundation: embedded in the charismatic Table Mountain, surrounded by ivy covered walls, sharpened by continual critical discussion with my fellow students, strengthened by endless hours in the practical laboratories and bedsides of medical school, and nurtured but nevertheless fully tested by my teachers.

With this foundation I have never doubted my ability to compete in the international scientific arena. I hope that as you graduate again today, you too are conscious of, and thankful for, your privileged preparation here at UCT.

As post-graduates, your professional quest is already well underway. You have already committed yourselves to the task of refining knowledge and understanding. We will hear later in this ceremony of the advances you are all already making towards the solution of crucial problems such as: AIDS, TB, Poverty, and Human Rights. These are the first fruits of what we expect will be your many contributions to our civilization. You are now an integral part of the amazing universal process whereby Mankind has been able increase the complexity

and accuracy of our knowledge from the fashioning of stone axes, to a description of our own Genome.

I became part of this process of discovery nearly 50 years ago in a small laboratory in the Physiology Department of UCT Medical School, where a few teachers and a handful of students became fascinated by questions of neuroscience. At that time there was very little tradition of neuroscience at UCT, and barely any resource to promote it. We scavenged unused equipment from dusty corners, and what we could not find or afford, we built ourselves in the workshops of the then Dept of Physiology under the bemused guidance of the technicians.

Just then, the first laboratory sized electronic computers were becoming available - and with great effort we persuaded the Medical Faculty to buy one machine, on condition that we would install and maintain it. The revolutionary Data General Eclipse minicomputer, sporting an amazing 64kB RAM, was installed in small disused shed, where the shining Wolfson building now stands.

That fledgling neuroscience lab with its avant-garde interest in computers, automated data collection, and neural computation gave rise in a few short years to half a dozen essentially self-taught neuroscientists whose abilities and innovative methods took them quickly to positions at Oxford, Cambridge, Harvard, Caltech, Maryland, Illinois,

the Weizmann, Max Planck, and the Swiss Federal Institute of Technology. They have all become international leaders in their field. For example, one of the largest neuroscience projects of all time, Europe's 1B Euro Human Brain Project, is now lead by a student from that little lab at medical school, with its charming view of Wildebeest trotting through the tall grass on the slopes of Devils Peak.

So, even though we may have a relative lack of resource, the training and exploratory spirit of UCT is able to make a world-class impact on science and society. Indeed, I believe that we gain advantage through being leaner and hungrier than our colleagues at more well-endowed institutions.

My personal scientific quest has been twofold. Firstly, in Neuroscience, to understand the nature of computation in the neuronal circuits of the neocortex, the region of the brain that is crucially involved in intelligent behavior. And secondly, through Neuromorphic engineering, to apply that knowledge to the development of novel electronic technologies for brain-like computation. During my career I have had the privilege and pleasure to work at some of the worlds foremost neuroscience laboratories, and to collaborate with many of the smartest neuroscientists on the planet. Together with them, I have made many more important contributions to neuroscience and neuromorphic engineering than I could possibly of dreamed of when I sat in your seat. The Orator has generously outlined some of my work.

However, despite these satisfying advances, my quest remains unfinished. I have not yet solved the central scientific questions that have driven me all my life! What is the nature of natural computation, that so reliably organizes our complex physical body from the information contained a single cell? How does that process then continue, through the structuring of the connections between neurons, to build a model of our World? How is the knowledge of evolution combined with the experience of the individual to optimize its interaction with the world? How are the connections of your brains changing, even as you listen to me, and so encode the events of this important day?

I (and my colleagues) continue to grapple with these fundamental unanswered questions and their implications for science and technology. It is important for young post-graduates to recognize that this essential lack of closure in our understanding is the very nature of the Quest, both in mythology and in reality. We strive, we search, we speculate; we suffer various degrees of defeat, and we celebrate various degrees of success - but we are not guaranteed to fully solve our life question. It is a delight in unfolding discovery that drives us ever onward. As in many endeavors, the journey of discovery is far more satisfying than its end! It is our collective journey rather than the individual end that propels the growth of human knowledge.

And so it is together that we tend the Lamp of Knowledge that is symbolized, in chief, on UCT's coat of arms.

But that Lamp is fragile. It is protected by a castle, and anchored in an ocean. The coat of arms reminds us, that civilization is not guaranteed to advance in knowledge and responsibility. The Lamp must be guarded vigilantly, because knowledge and its application are not always for the good of Mankind.



For example, over 2000 years ago the great Museum of Alexandria was dramatically successful gathering the great scholars of the Mediterranean and Middle Eastern world. They made substantial progress in astronomy, physics, mathematics, geography, medicine, law and literature. And they safeguarded the record of their progress by assembling in their famous Library the encoded knowledge of their world. But the increase in knowledge and sophistication of Alexandria attracted to itself conflicting ideologies and religions, which struggled for supremacy at the cost of scholarship and respect for truth. Bigotry combined with Roman militarism crushed the scholarship of Alexandria, extinguished their lamp of knowledge, and drove civilization into a thousand years of darkness.

Now again, we live in an age of dramatic growth in knowledge, and spectacular technological progress. And again ideologies, religions and militarism grow. The responsibility rests with all of us to ensure that in these exciting but unstable times, we tread vigilantly and with integrity, to ensure that the Lamp of Knowledge is not again extinguished.

UCT has ensured that you are prepared to do well in this task. Now it now remains for you to do good.

Thank you for your attention. and good luck to all of you!