

By Dr Lingaraj Krishna

A Short Story – The Professor

This short story arose as a result of a call for essays by the Singapore Orthopaedic Association, in conjunction with its recent annual scientific meeting. I intended to write a piece on the future of orthopaedics, but after several futile attempts at writing a formal essay, which usually ended with me dozing off, I decided to switch to a short story. Writing this short story was a lot more fun and allowed a degree of artistic license. My apologies in advance for any technological bloopers.

Gordon woke up feeling tired. He had gone to bed early, but had hardly been able to sleep. In fact, it had been days since he had had a good night's rest. It reminded him of his time as a houseman – that traumatic period punctuated by sleepless nights and the constant anticipation of being called. "Time", he ordered. The voice-activated image generator in his room produced a virtual image of the date and time in the space in front of his bed: "6:20 am, 12 October 2046".

It had been seven days since the patient had been admitted. But he was no nearer the diagnosis than when the patient first came in. He pulled off his blanket and went to the bathroom. "Today's schedule", he said, triggering the appearance of yet another virtual image, this time of his scheduler, reminding him of the activities that lay ahead – "7 am: Ward round. 8 am: Surgery. 2 pm: Clinic ...". His mind ceased to focus on the image that faced him. "7 am: Ward round", he muttered to himself. "I have to face that patient again. What am I going to say today? Don't worry, we just need to do a few more tests."

Gordon Wu. Consultant Surgeon, National Orthopaedic Institute. A product of Singapore's seamless orthopaedic training programme, Gordon stood on the cutting edge of modern orthopaedic practice. Computer-aided diagnosis (or CAD as it was now more popularly known) and transcutaneous chondroplasty – his name had become synonymous with these innovations that had revolutionised orthopaedics.

The patients were flooding in, and Gordon felt invincible. There had seemed to be no joint disease he could not diagnose or treat. That is until this patient.

Gordon walked wearily into the Joint Diseases and Therapeutics ward of the National Orthopaedic Institute. He reached the ward's central counter and picked up the miniature headset that bore his initials. It was connected wirelessly to the hospital's mainframe database, and incorporated his latest CAD software. "Lim Chong Meng", he said. The headset played out the summary he had heard countless times before. "Lim Chong Meng. 62-year-old Chinese male. No past history of note. Eight month history of pain and swelling in the left ankle and right wrist. Clinical findings of diffuse joint swelling in the left ankle and right wrist. 3-D virtual arthroskan shows extensive articular destruction." Gordon listened intently, hoping to pick up some new clue which would reveal the diagnosis that had eluded him thus far. "Bacterial DNA array #1 – Negative. Bacterial DNA array #2 – Negative. Immunological DNA array #1 – Negative." It went on, "CAD conclusion – Diagnosis indeterminate."

The system seemed unperturbed by its ignorance. Gordon, on the other hand, was racked with frustration – frustration at being faced with a condition he could not diagnose, and a patient he could not treat. "How could this be?" he thought to himself. "This is 2046! This is not 2006." Those were the days when doctors felt compelled to generate differential diagnoses. It was a tacit acknowledgement, he felt, of the inability to achieve total diagnostic



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accuracy at the outset. His was the age of CAD. “The computer is supposed to know everything,” he thought. “It is supposed to overcome our shortcomings, our inability to know everything.” This was the first time CAD had produced the conclusion “Indeterminate diagnosis”. It seemed ironic, but during the initial development of the CAD system, he had thought it superfluous to even include such a phrase in the system. So convinced was he of its omniscience.

“Good morning Mr Lim. How are you today?” said Gordon, trying to sound cheerful. “Well Dr Wu”, said Mr Lim, “I would feel much better if you could tell me what is wrong with me. I thought this was a world-class orthopaedic centre.” Gordon managed to end the consultation with some pleasantries and left the room as quickly as he could.

“Is CAD still malfunctioning?” asked Gordon. “No, it is not malfunctioning. It just does not know the diagnosis,” replied James, the fellow from New York, who was here at the NOI, trying to grasp the latest in CAD technology. Gordon mumbled something about having to start his surgery early and walked away. Gordon needed inspiration and he needed it quickly. The lawyers from the Patient Advocacy Group had already started to visit Mr Lim.

Gordon went to the surgical suite, wishing he did not have to. He had seven patients on whom he was to perform his trademark transcutaneous chondroplasty – the procedure that had made arthroplasty obsolete. But his mind was hardly able to focus on the task ahead. He met his friend Matthew in the changing room. Gordon and Matthew went a long way back, having worked together during most of their orthopaedic training programme. “How’s that case going?” asked Matthew. “I still do not know what is happening to Mr Lim,” replied Gordon. “I think you should ask the Professor for an opinion,” advised Matthew. “The Professor?” exclaimed Gordon. “He is going to have a field day.”

But Gordon had no choice. He could just imagine the delight on the Professor’s face at the failure of CAD. After all, the Professor had tried in vain to stop the development and hospital-wide implementation of CAD. “We must not lose sight of the fundamentals. The clinician must take precedence,” he used to argue, before being sidelined by the hospital’s administration, keen to embrace the cutting edge in medical technology that CAD represented. “Professor, how are you?” asked Gordon. “What brings you here?” said the Professor. “I need an

opinion,” replied Gordon, trying to hide his embarrassment. “Why? Isn’t CAD doing your job for you?” asked the Professor, his glee unrestrained. CAD was Gordon’s pride and joy, and he had spent many hours extolling the virtues of the system to the Professor. He felt absolutely gutted.

The Professor examined Mr Lim from head to toe, while Gordon looked on dejectedly. He then retook the history, carefully going through all the pertinent points. “Thank you Mr Lim,” said the Professor. “I will need to discuss your problem with Dr Wu.” They both left the room. “Tuberculosis,” announced the Professor. “This patient has tuberculosis.” “Tuberculosis?” retorted Gordon. “With all due respect, Professor, tuberculosis has been eradicated for the past 30 years!” “Well, that is what your computer says,” replied the Professor. “But tuberculosis has been around for centuries. It is not going to give up without a fight.”

“But how could CAD not make the diagnosis?” asked Gordon. “CAD works on a fixed set of assumptions and probabilities. Based on its framework and “experience”, if you can call it that, tuberculosis would not even have come into the picture. Like you said, tuberculosis has not been seen for 30 years,” replied the Professor.

“Clinicians, especially the older ones,” he said with a wry smile, “have the advantage of clinical experience. We see and recognise things that the computer cannot. My friend, you can take the equation out of a human and give it to a computer, but you cannot take the human out of the equation.” He then left, having made his point.

Gordon sat down, his head sunken between his shoulders. He was oblivious to the frenzied activity that was taking place around him. He then stood up and walked towards the Personnel Mobility Capsule. He stared at the instrument panel and clicked on ‘BASEMENT’. The Capsule stirred into action. The basement was where the library was situated. The library, once the esteemed repository of the printed book, had now been condemned to the indignity of the basement by the emergence of paperless books and the computer database. He entered the library and asked for the 15th edition of Campbell’s Operative Orthopaedics – the last of this venerable series’ editions to appear in print. He opened the volume he was looking for and slowly turned the pages, till he reached the one he wanted. He began to read about the Ziehl-Neelson stain. ■