

Higher Education: Open for Innovation?



*Higher Education: Open for Innovation?
(Dimensions of Openness in Higher Education:
The Role of Technology)*

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Introduction

It is an honour to be invited to address you. As a graduate of two of Europe's oldest universities, the University of Oxford and the University of Paris, it is a pleasure to be within the walls of China's eminent Peking University.

I am speaking to you on behalf of the Beijing DeTao Masters Academy, where I am one of the Education Masters. Some of my colleagues, other DeTao Masters from different disciplines, have given addresses at the University. I will say something more about the DeTao Masters Academy later and describe some of the Masters.

The title that I gave for this lecture was *Dimensions of Openness in Higher Education: The Role of Technology*. I have modified it to: *Higher Education: Open for Innovation?* Let me explain why.

The first meaning of the title is a simple question: is higher education open for innovation in the way it operates? The short answer, at least for western countries, would be that universities are not very open to innovation. I will say more about that in a minute.

A second meaning of the title is: 'does opening up higher education promote innovation?' I shall argue that it does. Fostering innovation is important for China. If opening up universities contributes to innovation it should be encouraged.

In the first part of the lecture I will show how, despite its traditional resistance to change, there have been important new developments in higher education in the last fifty years. The most important developments have been in the direction of greater openness. I will explore the different dimensions on which universities can become more open.

In the second part of the lecture I will argue that openness in its higher education system makes a society more innovative. Some of you may have heard a lecture by my fellow DeTao Master, Richard Greene, who claims to have found 60 ways to foster creativity and innovation. But I shall mention only two.

In the final part of the talk I will refer to some of the DeTao Masters. They are all people who have reached the pinnacles of their disciplines and professions. My fellow Education Master, Stamenka Uvalić-Trumbić, and I have had the privilege of interviewing many of them. I will try to capture some of the common aspects of their education and careers that have made them great.

Is Higher Education Open for Innovation?

So let me now go back to the first meaning of the question: is higher education open for innovation in the way that it operates?

Here is a quotation from an important report on higher education in the USA prepared by the Carnegie Commission fifty years ago. It said:

Taking, as a starting point, 1530, when the Lutheran Church was founded, some 66 institutions that existed then still exist today in the Western World in recognizable form: the Catholic Church, the Lutheran Church, the parliaments of Iceland and the Isle of Man, and 62 universities.... They have experienced wars, revolutions, depressions, and industrial transformations, and have come out less changed than almost any other segment of their societies (Carnegie Commission on Higher Education, 1968).

But higher education does change. The late 1960s were a time of considerable turbulence in western higher education. I was completing my doctoral thesis in Paris in 1968 when the universities were shaken by what were called, politely, ‘the events of May 1968’.

These events led to a famous misinterpretation of a statement by your former leader Zhou Enlai. In 1972 US President, Richard Nixon, during his visit to China, asked Zhou Enlai what he thought had been the impact of the French revolution. Zhou replied that it was too early to tell. Press reporters assumed that the leaders were talking of the historic French Revolution, the storming of the Bastille in 1789, and quoted the exchange as a charming illustration of China’s ability for long-term thinking.

However, many years later Nixon’s interpreter insisted that Zhou was referring to the recent student uprising in France in 1968 (McGregor, 2011).

The revolution of openness

Although 1972 was too early for Zhou Enlai to summarise the impact of that 1968 student uprising, those events, in France and other countries, stimulated some new thinking about the roles of universities. I

consider that the most significant 20th century innovation in higher education occurred one year later with the creation of the Open University in the United Kingdom. The opening ceremony of the Open University took place, with auspicious symbolism, in the week that the first man landed on the moon in 1969. A new era in our thinking about our place in the universe had begun.

The UK Open University

In its founding statement the UK Open University declared that it would be open as to people, open as to places, open as to methods and open as to ideas.

Open to People

To be open to people the Open University adopted the radical principle that no academic prerequisites would be required for admission:

"We took it as axiomatic," said the Planning Committee, "that no formal academic qualifications would be required for registration as a student." Anyone could try his or her hand, and only failure to progress adequately would be a bar to continuation of studies.

Open to Places

To be open to places the Open University implemented a multi-media distance teaching system, using printed documents, television, radio and later the Internet to reach large numbers of people in their homes and workplaces – at first all over Britain and now all over the world.

Open to Methods

Open to methods meant, in the words of the founding Chancellor, that *"every new form of human communication will be examined to see how it can be used to raise and broaden the level of human understanding."*

Open to Ideas

In explaining how the new University would be open to ideas the Chancellor said: *"there are two aspects of education, both necessary. The first regards the individual human mind as a vessel, of varying capacity, into which is to be poured as much it will hold of the knowledge and experience by which human society lives and moves. But the second regards the human mind rather as a fire which has to set alight... This also we take as our ambition."*

Opening higher education on these four dimensions is still a radical project today, but in 1969 it was a revolution.

I was personally infected by that revolution. Exactly forty years ago, when it was still very new, I spent three months as a graduate student intern at the Open University's headquarters. Those three months in 1972 were, for me, a first revelation of the coming revolution in higher education.

Everything about the Open University impressed me. There was the scale of the operation: in 1972 there were already 40,000 students after only one year of operation – today there are a quarter of a million. There was the tremendous dedication and idealism of the staff for serving the students. This dedication to

students reached from the most senior professor to the workers packing the course materials in the warehouse.

There was the terrific thirst for knowledge among the students, who were of all ages, most of them working adults. There was the wonderfully exciting use of information and communications technology. I spent all my spare time in that summer of 1972 viewing the fantastic TV programmes that the Open University was producing with the BBC, the British Broadcasting Corporation.

I was so inspired by my experience at the Open University that when I returned to Canada I decided to join this revolution and joined the Quebec Open University in 1973. This led me into a fascinating academic career that has been very different from the career that I had started four years earlier as a professor of metallurgical engineering.

The cherry on the cake was that 17 years later I was appointed Vice-Chancellor, or President, of the UK Open University and so became one of those lucky people who achieved his top career ambition. Those eleven years leading the Open University, from 1990 to 2001, were an extraordinary fulfilling experience. The University doubled in size, it began to offer its courses in many other countries, and we laid the foundations which enabled the Open University to be the global leader in use of the Internet in higher education today.

A moment ago I listed the four ways in which the UK Open University aims to be open: to people, to places, to methods and to ideas. I ask you to reflect on two questions. First, how open is Peking University on these dimensions? Second, are there other dimensions of openness that the UK Open University has not adopted?

I leave you to answer the first question yourselves, but let me now address the second question.

In 1971, the year that the UK Open University opened its doors, another new university, on the other side of the Atlantic Ocean, offered its students openness on another dimension. A great American educator, Ernie Boyer, who later received a posthumous honorary doctorate from Peking University, was then Chancellor of the State University of New York, America's largest university.

Empire State College

He set up a new campus, called Empire State College. Its aim was to open up the curriculum so that students could conceive and design their own programmes. This was new. At the UK Open University the curriculum is closed because, as in most universities, the programmes and courses are defined and developed by the University. Open University students have great flexibility to select courses in constructing their programmes, but the courses are pre-defined.

By contrast Empire State College allows students to invent their own courses and programmes according to their interests and needs. Its slogan 'my degree, my way' captures this perfectly.

These dimensions of openness that were introduced by the UK Open University and Empire State College remained the principal expressions of openness in higher education for the next thirty years.

Two dimensions – open admissions and distance learning – were widely copied and there are now millions of students in open universities around the world. Some of these open institutions have achieved high reputations for quality.

For example, the last time that the Government conducted comparative assessments of teaching quality in all English universities the Open University placed 5th out of a hundred universities, just above Oxford University where I once studied. Also the Open University has come top, and never lower than third, in national surveys of student satisfaction conducted with a large sample across all UK universities.

I note that Empire State College also comes first in student satisfaction surveys among the sixty campuses of the State University of New York. Athabasca University, which is Canada's Open University, also comes first in student satisfaction. These results show that openness, quality and student satisfaction can all go together.

Open Educational Resources

I now turn to a newer dimension of openness which has great importance for the future. This is Open Educational Resources, which are educational materials that can be freely accessed, used, re-used, shared, and modified.

The Open Educational Resources movement began over a decade ago when MIT, the Massachusetts Institute of Technology, started making the lecture notes of its faculty freely available on the Web. It was called Open Courseware and it enabled people all over the world, many of them in China, to see what and how MIT was teaching.

Seeing an important new educational development, UNESCO convened a forum on Open Courseware in 2002. This meeting invented the term 'Open Educational Resources (OER)' as a general term for open courseware. Since then the movement has grown steadily.

China is now very active in Open Educational Resources. Projects include the Chinese Quality Courses Project, the National Cultural Information Resources Sharing Project and the Science Data Sharing Project. For example, the Chinese Quality Courses project states that "all materials of the courses, as long as they meet defined educational quality standards, shall be posted online without any password to limit accessibility and shall be open to the general public".

There is also the China Open Resources for Education (CORE). This is a non-profit organization established in October 2003 as a consortium of universities. It has translated many OER from the United States into Chinese.

The UK Open University has become another large provider of OER through its OpenLearn website, which has 28 million users, and on iTunesU where it is the biggest global player with 450,000 downloads per week.

The availability of a rapidly growing amount of OER offers new opportunities for universities to be open. Many millions of people spend time looking at OERs in various formats: print, video and audio.

Some of these people are potential students and Martin Bean, the president of the UK Open University, argues that universities should provide paths from this informal cloud of learning towards formal study for those who wish to take them (Bean, 2010).

The UKOU's OpenLearn website, for example, is not just an OER repository but a hive of activity involving many groups of learners. Digital technology is breathing new life into the notion of a community of scholars and social software gives students the opportunity to create their own academic communities.

OERs also facilitate the expansion of Empire State College's open curriculum model and a group of ten universities around the world are setting up a consortium called the Open Education Resource University that will offer teaching, assessment and certification to students who learn by accessing OER.

DeTao Masters Academy

My final example of a new element of openness and innovation in higher education is the DeTao Masters Academy. Later I shall give you examples of individual DeTao Masters who, through their education and careers have developed their talents for innovation to a high level.

China has a very long tradition of international intellectual exchange. Xuanzang, who worked at Nalanda University in India in the 7th century, is one of the world's earliest international scholars.

The aim of the DeTao Masters Academy is to bring to China hundreds of the world's topmost thinkers and professionals in a wide range of disciplines so that they can share with high-level Chinese experts the tacit knowledge that they have gained over their distinguished careers.

DeTao is based on the idea that teaching in the traditional university system tends to become too formal with too much emphasis on the boundaries between disciplines. The problem, in the view of DeTao's founders, is that this formal approach does not create a capacity for innovation at the very highest level. That requires both a pluri-disciplinary approach and an environment for sharing tacit knowledge that is difficult to formalise.

De Tao is developing fast. There are already 80 highly distinguished Masters on board and I shall describe a few of them in a moment. But first I must return to the second question in my title.

Does Opening up Higher Education Promote Innovation?

"Does opening up higher education promote innovation?" When Richard Greene, who is one of the DeTao Masters, lectured here he talked about his 60 models of creativity and innovation. I shall focus on just two.

The principle of requisite variety

The first is the cybernetic principle of Requisite Variety articulated by Ross Ashby 50 years ago. This principle states that the larger the variety of actions available to a control system, the larger the variety of perturbations it is able to compensate.

China is a large and rapidly changing country. Coping with the many challenges of the future will require a great variety of responses. This means, first, that countries should give everyone the opportunity to be educated to their full potential. Furthermore, since Chinese people now live long lives these opportunities must recur throughout life. Classifying the educational status of people for life before the age of 20 is bad for them and for the nation. Individuals develop their potential, their ambitions and their motivation at many different moments during their lives.

You all know this. China is now switching the focus of its postsecondary education planning away from the expansion of universities towards the provision of lifelong learning opportunities. My argument is that open education systems contribute more effectively to this goal.

For a mature adult the motivation to succeed at learning something new is usually more important than their earlier qualifications, which may go back many years. That is why open admissions make sense. Furthermore, working adults are busy people, so distance learning is often a better way of studying. The onward march of technology is making distance learning systems more and more effective.

I conclude that opening up education systems in the ways I have described will make Chinese people and the whole nation more creative and innovative. The DeTao Masters Academy is one contribution to that process.

Innovation occurs when planes of discourse intersect

My second model for creation and innovation is even older. I read about it as a boy in Arthur Koestler's book *The Act of Creation*. It is the simple idea that creation and new thinking occur when two different planes of intellectual discourse intersect.

This idea is now part of our everyday thinking. New areas of research and teaching open up when two different disciplines are brought together. Ecology grew at the intersection of several disciplines. Metallurgy, which I studied at Oxford, is blend of physics and chemistry. You can all think of examples of new areas of study which combine older disciplines.

Many successful and creative individuals have combined several disciplines. One of our tasks as Education Masters at DeTao is to conduct video interviews with the other Masters in order to gather interesting material for the website.

These DeTao Masters are all brilliant and successful people. Having interviewed sixteen of them we see patterns emerging. Let me describe some of them to you and point out the common factors.

DeTao – the Masters

Let me begin with examples of two Masters, both in the Film Industry, whose areas of expertise are inter-related: Sing-Choong Foo, a Master of Special Visual Effects and Nathan Wang, Master of Film Music. Both are of Chinese origin but live and work in California. They now have functioning studios in Beijing.

Sing-Choong Foo

Sing-Choong Foo's academic background combined advanced Physics (reflectometry and refractometry) with film production. Combining these rather different areas is what has made him a leader in special visual effects in the film industry.

Nathan Wang

Nathan Wang also has a pluri-disciplinary background as a musician, mathematician and psychologist. However, music has always remained his passion and he now works both in Hollywood and in Chinese cinema. He is one of the most successful film composers and has worked both in Hollywood and Asian cinematography with renowned names such as Steven Spielberg and Jackie Chan.

Haim Dotan

Another example is Haim Dotan, who works in both the US and Israel. Although he is primarily an architect, he is also a talented painter and a poet. His two tri-lingual books of Poetry and Architecture "After the Rain" and "Echo in the Desert" won the prize for the Most Beautiful Book in China 2011.

Prof. Dotan is a man with a mission to change the way that people live in urban centres. He wants to use technology to achieve low cost, ecological green cities and more socially focused and culturally authentic communities. Haim Dotan believes passionately in interacting with his apprentices – of different ages and generations – in direct communication, using poetry and its links with architecture as one the channels of communication.

Matias del Campo

Matias del Campo is another architect. He came from a family of architects but was more attracted to art. A scholarship to an art school in the USA brought him into contact with the use of new technologies in film design, which he later applied to architecture. He has worked in Spain and Austria and, when he designed the Austrian pavilion for the Shanghai Expo, he took the unusual decision to build it entirely in China from 3D models rather than shipping pre-fabricated sections. He thinks that DeTao could be the 'epicentre of an earthquake' in architectural training, saying that a good thinker creates ideas and a good architect steals good ideas.

Professor Del Campo's cross-cultural experience has made him aware that while architects all over the world speak a similar language, there are important cultural differences in how students think about the notion of 'space'. Chinese, Japanese and European students are totally different. Chinese students like to set things on big scale but Japanese students are very uncomfortable with big space, they like to design everything small space. European students tend to design everything bigger than necessary so they can enjoy the space. So "space" is viewed differently in the eyes of different people from different cultures.

Shui-yan Tang

Shui-yan Tang is Master of Public Administration. He originally studied philosophy in Hong Kong and then did research in social-political science in the USA where his mentor was a Nobel prize winner.

His current interest is in rules – looking at rules from an institutional perspective. This means how to develop rules, how to use rules and how to make sure rules are not abused. He notes that societies and

institutions have both formal rules and informal rules and observes that during the course of Chinese history, informal rules worked better than formal rules. Making acceptable rules is a difficult task.

He told me that when DeTao asked him to give a talk at National Academy of Governance he was not prepared for the speech, so he chose to talk about How to Use Rules, listing 10 principles. He found that trip to China so stimulating that after returning home he wrote a book called Speaking Truth to Power, which tries summarise ways of solving problems in China. His main goal in life is to seek truth.

Roger Fidler

Roger Fidler is a Master of Information Design. He also has a pluri-disciplinary background as a journalist, designer, technologist and entrepreneur.

In the early eighties, he foresaw the decline of printed newspapers and forecast that digital publishing would be the future. He conceived a 'tablet' that would be portable, lightweight, and easy to use but would respect the essence of newspapers, which is browsing. Other newspaper people thought he was crazy, but Chinese and Indian graduate students were eager to work with him.

So he persevered and the tablet became a reality in Steve Jobs' iPad 30 years after he conceived the idea. He received one of the very first iPads from Apple in April 2010. He believes that design comes first and engineering second, which distinguishes Apple from Microsoft and is the basis of Apple's success. In China Professor Fidler will share with his students his beliefs in hard work, perseverance and taking risks. They should not fear failure but come back with a new idea for success.

Bruce Logan

I now describe a Master of Environmental Engineering. Bruce Logan grew up by the water in Long Island, New York and later chose water as the focus of his work. He first called himself a Chemical Engineer until the term Environmental Engineer gained status. During his career he took advantage of a sabbatical year in Germany to reflect hard on the key challenges facing the world. He decided that that key challenge was to find a way a purifying water that generated energy instead of absorbing it. So he decided to find new ways of creating electricity through microbial organisms in water.

His time in Germany also gave him a wide network of international contacts including three Chinese universities: Harbin, Dalian and Tsinghua. One major discovery of a new fuel cell was made jointly with a Chinese student who had reached the same idea that he had conceived a few days earlier. Their joint paper was at first rejected due to an error in calculation but later won an award.

He hopes that his work with DeTao will create links with industry and government so that he can test some of his innovations at scale, such as generating electricity from saline gradients.

Stamenka Uvalić-Trumbić

I conclude these short portraits of the Masters by commenting on the career of my fellow Education Master, Stamenka Uvalić-Trumbić. Born in Sarajevo, in former Yugoslavia, she was educated in four education systems, in three languages, and has lived in Austria, Norway, France, India, Yugoslavia and Romania.

Her postsecondary studies were in Literature. Later she became the Secretary-General of the Association of Universities of Yugoslavia, before joining UNESCO, with which she was associated for thirty years, working in Bucharest and Paris, most recently as Chief of the Section for Reform, Innovation and Quality in Higher Education.

This was a double challenge. First, higher education is resistant to change and innovation. Second, international intergovernmental organisations like UNESCO also cling to attitudes and ideologies long after the world has adopted new ideas. But Stamenka succeeded in modernising UNESCO's thinking, particularly in terms of the globalisation of higher education and in working in partnership. She made governments understand that as higher education increasingly crosses national borders, the quality assurance of universities' work is an international concern. The Guidelines for Quality Provision in Higher Education, developed jointly with the OECD, the Organisation for Economic Cooperation and Development are a lasting legacy to her commitment to partnership, reform, innovation and quality.

Conclusion

It is time for me to conclude. In this lecture I argued, first, that important innovations are taking place in higher education. I emphasised new developments that are making universities more open on several dimensions. Second, I argued that these innovations of openness are particularly important for the economic, cultural and social development of our societies. That is because they empower a larger proportion of our people to achieve their educational potential and make a stronger contribution to their communities.

Finally, I used the DeTao Masters Academy as an example of innovation in two ways. I presented DeTao as the most modern expression of the tradition of international intellectual exchange that goes back more than a thousand years in China. I also gave you sketches of the lives and careers of some of the brilliant DeTao Masters. I hope their example will inspire you to learn to innovate. In terms of the dimensions of openness that I described Peking University is a rather closed institution. But what matters is the openness of your minds. I leave you with the 'four opens' of the UK Open University and urge you all, in your lives and careers, to be open to people, open to places, open to methods, and open to ideas.

It has been a privilege to address you.