Free the Education of “Double First-Class” Talent from Historical Inertia

Lan-Yong ZHANG, Sheng LIU, Peng LI and Jia-Jia ZHOU

College of Automation, Harbin Engineering University, Harbin, China

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Abstract. It is commonly acknowledged that China’s higher education reform has entered the “deep water zone.” However, it appears that no consensus has been reached in terms of the precise definition of the “deep water zone.” Undoubtedly, since the implementation of the Reform and Opening Up policy (the economic reform), higher education in China has undergone several major reforms and reached remarkable achievements. However, compared to reforms in other areas of higher education, the quality of higher education remains insufficient to meet the growing demands of society. When visited by the Premier of the State Council in 2005, China’s famous aerodynamicist and cyberneticist Qian Xuesen posed a sharp question, “Why is it that our universities fail to provide outstanding talent [to society]?” (Qian’s Doubt). Thereafter, Qian’s Doubt has been used to represent the situation of the higher education system being challenged by society. Thus, an undeniable reality has been uncovered: The inability to provide qualified talent has become the single greatest weakness in the reform and development of higher education in China. For that reason, it is necessary to thoroughly reflect on the nature of the higher education system in China.

1. The Inability to Provide Qualified Talent has Become the Single Greatest Weakness in China’s Higher Education

Not long ago, I visited the World Health Organization (WHO) and met with their Assistant Director-General. He pointed out to me that, among the 7,000 employees working for the WHO, only a little more than 40 employees were from China. At present, China is required to pay the WHO approximately 25 million US dollars in membership fees, and this increased to 50 million US dollars in 2018. However, the amount of funds that China has submitted to the WHO and the number of Chinese representatives sent to the WHO is drastically imbalanced (typical lack of representativeness). He further pointed out that, among the more than 100 international organizations in the world, few have not yet encountered such lack of representativeness as when dealing with China. According to the Assistant Director-General, the key reason that China is unable to send high quality personnel to work in international organizations lies in the lack of quality of the higher education system. Compared to China, Japan has had 25 Nobel Prize winners since the end of Second World War, all of whom have received Bachelor’s degrees in Japan. In addition, only two of the Nobel laureates studied a foreign Masters’ degree, and only three studied a foreign PhD. This example shows that Japanese’ universities are highly competitive [1].

During the most recent evaluation of the universities in “Project 985” (a project that aims to promote the development and reputation of the Chinese higher education system in the 21st century by establishing world-class universities), the evaluation center of the Ministry of Education adopted a new initiative by inviting experts from the United States, the United Kingdom, Canada, and Japan to participate in the development process [2]. The majority of the invited experts were presidents/vice presidents of leading universities and scholars engaged in higher education research. Furthermore, few of the experts had previously participated in the evaluation of top Chinese universities. Following in-depth investigation and evaluation, the experts reached a common understanding: the infrastructure of the universities was in a leading global position [3]. In fact, some experts expressed surprise and envy at the level of infrastructure, which they stated was beyond their expectations. However, after listening to lectures, talking to students at symposiums, and reading
teaching materials, they also agreed that there is a large dissonance between Chinese universities and the leading global universities in terms of educational concepts, educational models, and pedagogical methods. The most prominent problem was that the majority of Chinese students lacked critical thinking [4]; their understanding of the knowledge was relatively superficial; their knowledge range was relatively narrow; and few students had the interdisciplinary knowledge and international vision required to be competitive.

What impressed me most was the speech of the vice president of the University of Chicago at the evaluation feedback meeting at one of the universities. He said, “The educational goal of your university is to train leaders to innovate and to develop entrepreneurial talent. Such great aspirations are necessary for the construction of top universities [5]. However, I wonder if your school has considered that, after 20 years, or maximum 30 years, when China has become the world’s largest economy, if the talent cultivated by your university today will be the ones that govern the world?” His words really alarmed me. I had never considered the situation with such awareness or degree of preparation; and, as far as I know, the management teams of the top universities in China had not seemed to have thought about it either. None of us had thought about teaching our students with the ability to govern the world, let alone prepared for such an ambitious goal. For us, it is the universities’ innate responsibility to educate talent for the nation’s need; whilst training talent for the world felt like something that was required in the far future only. However, numerous Western scholars have already considered the topic and cast substantial concern on to it. The fact that preparing the students for the future needs of the world was proposed by a foreign scholar is yet further proof that China’s higher education lacks forward thinking. In twenty or thirty years, when today’s undergraduate and graduate students are in their 40s to 50s, China may have already become the number one economy in the world. However, the vision and ability of the talent developed by today’s higher education system are insufficient to become global leaders.

There was yet another issue that was raised by the foreign experts after observing the teaching process in classrooms. In 2016, after observing a few lessons during the assessment of a university, the vice president of the University of California, Los Angeles (UCLA) expressed her disbelief of the lack of interaction between students and teachers in the classrooms of top universities in China. She could not understand how an academic environment could involve one-way communication only from the teacher to the students, and surmised that such an environment would be impossible to cultivate students’ creative and critical thinking abilities [6]. When we asked her what she considered good classroom teaching to be, she said that there are five states of classrooms in universities. The first state is “silence,” meaning that the students sit quietly in the classroom without any participation. The second state is “answering,” which implies that the students only participates in the class by giving simple answers such as “yes” and “no,” when asked by the teacher. The third state is “dialogue,” where certain interactions can be found between the teacher and the students in the classroom. The fourth state is “critical challenge,” where students question the teaching content provided by the teacher. The fifth, and most desirable state, is “debate,” which means the students and teacher are actively engaged in debates on a given subject. Although the classroom teaching quality during the assessment period was better than usual, compared to the expectations of the experts, the quality still demanded substantial improvement.

Many factors affect the quality of higher education in China. The foreign experts also pointed out that the low quality was due to the fact that China’s top universities tended to cast more attention on scientific research than teaching [7]; the universities have generally not realized the urgency and importance of talent cultivation. Just as the vice president of the University of Chicago said at the evaluation feedback meeting, “I believe that the rank of indicators in terms of research ability of China’s top universities will continue to rise among the international community. However, your talent training ability and scientific research ability are not synchronized. First-class universities should realize that, when their scientific research ability reaches a certain level, talent cultivation ability becomes core competitiveness [8].” The experts all recognized the noticeable improvement in the infrastructure of China’s top universities; however, they also suggested that the universities pay more attention to the cultivation of talent. According to the experts, only when the university plays a
leading role in talent development can it truly be regarded as excellent and rank among top universities. One of the experts that had previously participated in several evaluation programs pointed out that, although China’s top universities have implemented good measures in developing talent, the majority of the measures appear to be imported from the practices of foreign universities, lacking localization or Chinese characteristics [9]. The comments of the experts may sound “acrimonious,” but they have unveiled the key weaknesses of the higher education system and have profound significance as an “early warning.”

2. Reflections on the Higher Education System in China

Not long ago, Xiamen University received a group of stomatology experts sent by the Ministry of Education to assess the qualifications of the Department of Stomatology so that our university could launch corresponding educational programs. However, the person that represented the university to deliver the self-assessment report was unaware of the difference between “dentistry” and “stomatology,” and frequently used “dentistry” during the report [10]. The leader of the expert group corrected him by reminding him that, in China, the discipline should be called stomatology rather than dentistry. When asked about the reason and the difference between dentistry and stomatology, he explained as if talking to someone with no knowledge in the field, that, dentistry is the term used by European and North American countries, and stomatology is the term used by the former Soviet Union, and that the usage of the term was determined as early as the 1950s [11].

In fact, in addition to stomatology, a large number of concepts, terms, and institutional designs in our higher education system were inherited from the former Soviet Union, including the classification of disciplines, teaching plans, and the systems behind the teaching and research offices. However, with the accelerated internationalization of higher education in our country, finding accurate translations and corresponding English terms for the concepts that were commonly used in the past has become increasingly difficult. For example, the term “zhuanye (专业知识)” have had many translations in English, such as “program,” “major,” “minor,” and “specialization.” In addition to terminology differences, the program structure is also different. For example, when introducing the universities, the representatives of Chinese universities tend to list the number of first-tier disciplines, second-tier disciplines, national-level key disciplines, and featured disciplines at their universities. However, such a classification of disciplines is likely to confuse foreign experts. What caused such discrepancies? The answer is associated to the development stages of higher education in China as well as our preconceived notions and understanding of higher education. Nevertheless, the influence of the former Soviet educational model is an important influential factor.

Looking back at history, under the guidance of Soviet experts, China’s higher education sector underwent a series of transformations in the 1950s. The transformation was conducted at the macro, meso, and micro levels, ranging from the overall management system to specific teaching fields. At the macro level, using large-scale adjustment of faculties and departments as the entry point, China established a higher education system that was led by the ministries and departments of the government, which was directly associated with the needs of national economic development. At the meso level, the universities established a unified layered management system (university → department → faculty → teaching and research office). At the micro level, the curriculum, syllabus, and teaching materials were directly inherited from that of the former Soviet Union. According to a document published by the People’s Daily at that time, by the end of 1956, Soviet experts had prepared 629 textbooks and helped the Chinese teachers establish 496 laboratories, 192 data rooms, and 34 internship factories. By the first half of 1957, Soviet experts had trained 80,285 postgraduates and teachers in training for China. The number of courses launched by the experts, or launched with the assistance of the experts, had reached 899. In addition, the experts also trained Chinese teachers in the teaching methodology behind 443 courses. One such example is Harbin Institute of Technology. From 1951 onwards, Soviet experts had helped the institute establish 19 majors, teach 151 courses, prepare the teaching materials of 66 courses, establish 68 laboratories with modern equipment of the time, and train 577 graduate students. Renmin University of China has also
benefited from the process. By 1957, the university had launched more than 140 courses, while the textbooks and teaching materials of more than 100 of the courses were written by Soviet experts. In addition, more than 700 teachers of the more than 1000 teachers of the university were directly or indirectly trained by Soviet experts [12].

It can be said that the educational model of the former Soviet Union laid the foundation framework for the contemporary higher education system in China. The majority of the basic management systems in higher education that we are familiar with today, such as the organizational structure of the universities, pedagogical plans, syllabuses, teaching plans, teaching workload systems, and allocation of teachers, were all formed in the 1950s. Although the organizational structure and educational models of China’s universities have undergone continuous reform following the implementation of the economic reform, the influence of the Soviet educational model is still deeply rooted in terms of teaching and talent development concepts and processes. Such influence is particularly prominent in two aspects: the planning process is highly centralized, and the teaching system is highly specialized.

Firstly, guided by the concept of developing talent in various fields through systematic planning and proportional allocation, and with reference to the academic discipline classifications of Soviet universities, China formulated the first national classifications of academic discipline in the “Catalog of the Classification of Academic Disciplines in Higher Education,” in 1954. Since its publication, the catalog has been modified and updated several times. In addition to serving as a guide for the program design of universities, the catalog also became an important point of reference when the government formulates the enrollment plan for the higher education system, and employment program for graduating students at the national level; it is also the basis for universities to allocate resources, arrange teachers and courses, and establish laboratories. As a result, the catalog was turned into an administrative management method rather than a classification of knowledge.

Secondly, in order to quickly and efficiently satisfy the urgent needs for talent in various industries, the country promoted unified training plans, a unified syllabus, unified teaching materials, and even a unified teaching management system for each discipline, resulting in a unified educational model for each discipline among universities across the country. In addition, each university used academic disciplines as basis when establishing departments, and organized and managed the teaching programs according to the faculty. Thus, a specialized teaching system was formed. In terms of the relationship between the educational system and the economy, the specialized educational system suited the development needs of the centralized, planned economy at that time; however, the centralized, planned management system reinforced the specialization of the educational system.

For a country with insufficient wealth and great ambition to improve its educational system, the highly planned and specialized educational model did indeed help China to cultivate a large number of talents to satisfy the urgent needs of all industries. However, with the reform of the social and economic system, the economic system shifted from a planned economy to a market economy, and the market began to play a decisive role in resource allocation. While China was striving to develop from a country with large pools of human resources into a country with large pools of competent professionals, the highly centralized, planned education model and overly specialized teaching system became increasingly unsuitable for the needs of society [13]. It is of great significance to review the root causes of such unsuitability:

1) Reflections on the goals of higher education: Previously, the emphasis of higher education in China was cultivating high-quality, specialized talent. However, with the social transformation, industrial upgrades, and promotion of innovation, the discrepancy between the specialization of university students and the professions available in society began to increase. Particularly, with the rapid development of Internet technology, it is doubtful whether we should continue under the pretense that specializations should match professions at all. It is suggested that the problems in our higher education system should be reviewed from the perspective of lifelong education, and goals should be modified and reformed, as should the model of the specialized education system.
2) Reflections on the academic discipline system: From a certain perspective, the academic discipline system is a “cross-section” of the knowledge system, which is composed of relatively mature knowledge systems extracted from the ever-changing knowledge system of each subject. For a country with relatively underdeveloped science and technology, a relatively stable classification of academic disciplines undoubtedly facilitates the stabilization of scientific and technological development and assures the quality of education. However, when a country’s science and technology has developed to a certain level and is seeking further breakthroughs, the talent development programs should not be restricted by manually designed classifications of academic discipline. Particularly, driven by the National Innovation-Driven Development Strategy, the strong demand for talent in emerging disciplines and interdisciplin ary subjects has greatly challenged the traditional classifications of specialization. The question whether we should still adhere to such traditions or even respect the origins of specialization at all in this context is worth further consideration.

3) Reflections on teaching processes: The traditional model of specialized education was essentially assigning teachers to specialize the “production line” by conducting intensive teaching of focused knowledge to a class. However, today, the diverse learning needs of students and various methods of knowledge dissemination have exposed the natural flaws of the traditional, knowledge-oriented teaching methods. What the society needs today are ability standards, alongside the ability to swiftly adapt to social change and a value-added values system. These changes require the universities to provide personalized assistance to their students and shift the focus of the entire system of curriculum development and teaching to the cultivation of students’ abilities and qualities.

4) Reflections on the organization of universities: Based on the principles of training talent and mirroring the educational model of the former Soviet Union, the universities in China established an organizational system based on the framework of “university → department → faculty → teaching and research office.” However, this system tends to emphasize the scientific research function of universities and ignore the function of talent cultivation. The emergence of a large number of new types of scientific research organizations have made the internal governance of universities extremely complicated. As a result, even the most basic functional organizations of talent training have begun to be “torn apart.” The establishment of a new teaching organization has to become a top priority. How universities can return to their origins and build modern organization structures and teaching systems starting back at the foundations is a vital management question as well as a principle of judgment of the basic values of a university.

3. Freeing Higher Education from Historical Inertia

Since the implementation of the economic reform, in order to adapt to the needs of the reform and corresponding diversification, China’s higher education system has been attempting to break free of the restrictions of the old Soviet model. Since the reform of the management system in higher education in the 1990s, and the merging of colleges and universities thereafter, the problems caused by the single-discipline colleges and universities and industrial universities established by units of the central government was resolved. The reform of the enrollment of higher education and employment system of graduating students has driven the universities to implement more social and market-oriented programs. The reform of the two-tier management system within the universities has created external conditions for the reform of education models. Other reform measures included the recruiting of students with a broader classification of disciplines and providing more specialized programs thereafter; establishing both major and minor programs, implementing top-talent programs, and even constructing undergraduate colleges. Nevertheless, objectively speaking, although management, enrollment, and student employment systems of universities have undergone major changes, the fundamental issue of talent cultivation remains unresolved. The majority of the program reforms promoted by universities have only involved slight adjustment and modification of the original systems, none of the reform programs was able to free the universities from the boundaries of the Soviet system or fundamentally engage the teaching system.
Let us take the university credit system as an example. China implemented the reform of the credit system at the beginning of the 20th century. However, up to today, the credit system only exists in form, and the essential functions of the credit system are yet to be truly implemented. Specifically, the freedom of study, such as being able to choose courses, majors, and progress freely, has not been implemented. According to the statistics of 718 higher education institutions in China collected by our research team, the proportion of students that changed the major during their study was less than 2% of the total students and 7.4% of the recruited students. The statistics of 820 universities showed that the graduation rates and proportion of students that were granted academic degrees was 97.75% and 96.90% on average, respectively. In the United States, the average graduation rate of the top 50 national universities has been only 89.7% over the past 6 years, and the average graduation rate of the national universities that ranked from between 51 to 100 was only 56.2%. Although such a low graduation rate is not necessarily suitable for the education system of a country with such a large population as China, an overly high graduation rate and proportion of students that are granted with academic degrees are against the goal of the credit system. These findings show that the implementation of the credit system in China is still done at a superficial level. Furthermore, for years, the Chinese government has emphasized that higher education should focus on the development of talent with profound understanding and a wide coverage of knowledge. However, the barriers between disciplines still exist, and the classification of disciplines has grown more specific, programs and courses provided by the universities have become more specialized, and the curriculum structure has turned more rigid. The reason for such a phenomenon lies in the fact that, influenced by the mentality inherited from the planned economy; the academic discipline system has become an administrative system, a resource allocation system, and an academic organization system. These examples highlight that, although driven by the economic reform, the employment environment has shifted to better suit the market economy, leading to changes in the student enrollment systems, employment systems for graduating students, macro administrative systems, internal management systems of the universities, reform of talent training, teaching plans, and curriculum programs; and pedagogical methods have lagged behind, where few fundamental changes have been applied. In addition to political, economic, and cultural factors, the historical inertia of the development of universities is an important aspect that has caused such an imbalance.

A review on the history of China’s higher education over the past 100 years shows that the development of China’s universities has undergone three stages. The universities in the Republic of China mostly applied the systems used in Europe and the United States. For example, Cai Yuanpei, after studying in universities in Germany, introduced the values from German universities to Peking University when he was president. Mei Yiqi studied in universities in the United States; therefore, the management of Tsinghua University adopted the US model. The first president of Xiamen University, Lin Wenqing, studied at the University of Edinburgh; hence, the system of Xiamen University was similar to the British model. Following the founding of the People’s Republic of China, the entire country adopted the education system of the Soviet Union and the European and American models faded out of our universities. Following the implementation of the economic reform, although the Chinese government did not request the universities to adopt systems from our peers in North America, the majority of the universities appeared to begin shifting towards the models used by universities in the United States. However, the universities failed to realize that the education models of North America and those of the former Soviet Union are completely different. As a result, during the higher education reform, the adopted US models contrasted starkly from their original concepts. For example, re-study courses are an important feature of the credit system, are re-sits in examinations. However, in addition to re-study courses and exam re-sits, universities in China also permit “qing kao,” an additional and final opportunity to pass all failed examinations prior to graduation. Qing kao has thus become a unique type of examination system that only exists in China. This example shows that previous habits play a significantly negative role in the reform process and often restrict and constrain the innovation and development of talent cultivation.

Although on the surface, the higher education model has been shifting towards the US model, in essence, the impact of the Soviet model remains strong. Since the majority of the teachers received
their education under the Soviet educational model, it is too easy for such a model to be inherited without realizing that the entire system is still imprisoned by the Soviet model. Such historical inertia is reflected in three aspects: inertia in classroom teaching, inertia in the education of disciplines, and inertia in the education of subjects. In addition, such inertia has been modeled and solidified, and the entire educational community has entered a collective unconscious state. A considerable number of teachers have been tied to a specific course, subject, or discipline since their first day of entering the university. When teachers are “overly-specialized” by universities, it is unlikely that the interdisciplinary knowledge of the corresponding university, discipline, subject, or teacher will be high. Such a system is not conducive to the implementation and development of high-quality liberal education, nor the cultivation of talent with an interdisciplinary knowledge structure. In this sense, freeing the higher education system from historical inertia means to free higher education from the Soviet model. This is the requirement of developing a country with a large pool of human resources into a country with a large pool of competent professionals.

Nevertheless, from a dialectical perspective, the Soviet model has left many valuable experiences on China’s higher education, such as the teaching and research office system and the internship system. Therefore, a higher education free from the Soviet model does not mean abandoning good customs. Instead, the education community is expected to have a deep understanding of the impact that historical inertia has on higher education during the reform process. From the perspective of long-term history, the higher education system in China has remained overshadowed by the imperial examination system. From the perspective of more recent history, higher education in China has never detached from the shadow of the Soviet model.

As you may well know, there are three types of higher education systems in the world: the European system represented by the United Kingdom, the North American system represented by the United States, and the planned education system represented by the former Soviet Union. When Britain was the strongest country in the world, many countries followed the British system. When the United States became the most powerful country, countries began to follow the model of the United States. Since the former Soviet Union was the “big brother” among socialist countries, the socialist countries tended to adopt the Soviet model. It is not difficult, by reviewing the history, to see that the development of China’s higher education is characterized by a late start and driven by external factors. Although the government advocated the modified-adoption of foreign systems to suit Chinese society, since the country was underdeveloped at the time of implementation, universities tended to adopt the foreign systems without adaptation or modification. However, learning from the former Soviet Union was a forced action driven by the Cold War and was the product of confrontation between the Eastern and Western political camps.

From the history of the development of the various higher education systems of the world, in addition to scientific research, the influence of top universities is also reflected through their driving of global trends and innovations in the education system. Well-known examples include the collegiate system of the University of Oxford and the University of Cambridge, elective system of the Harvard University, and the integration of teaching and research implemented by the University of Berlin, Germany. Since the launch of the “211 Project” and “985 Project” in China, scientific research has received unprecedented attention and has achieved substantial results. However, talent cultivation remained the “short board” of higher education in China. The majority of the top Chinese universities require that the candidates of teaching staff receive overseas education. In addition to the negative impact of over stressing “foreign standards,” this phenomenon reflects the dissatisfaction and distrust of these universities towards locally educated talent. Confidence in one’s own education system is the foundation of confidence in one’s own culture. When China’s higher education is faced with the tide of globalization, and when China is on its way to becoming a top power in the world, the higher education system must find its own development path that provides a positive influence on the entire world. The key to achieving this goal is to free higher education from historical inertia. In addition to the requirement of maintaining full awareness of the weaknesses and deficiencies of the higher education system in China, the higher education community should realize that, in order to train the future leaders of the world, the education system should develop beyond previous talent
development systems and models. To summarize the above argument in one sentence: Universities should tightly hold the root of talent cultivation.

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