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## Returnees and Diaspora as Source of Innovation in Chinese Higher Education

**Abstract** This paper highlights how returnees and knowledge diaspora are important sources for China’s human resources development, identifying push and pull factors that also contribute significantly to innovation in the higher education sector. By outlining China’s key projects and schemes for recruiting international professional workers, the paper argues that bringing advanced knowledge and skills back to a country of origin through international education and experiences is neither new, nor limited to China. At the same time, the rise of a large, worldwide Chinese knowledge diaspora is now of global importance in promoting transnational scientific and business networks that underpin both research and development, and the quest for world-class universities. China’s size and weight, its determination to boost development and improve its higher education system, as well as the willingness of both diaspora and returnees to contribute, constitute its advantages. However, there remain limitations to its success, notably a lack of high-quality research, reservations regarding new ideas, low awareness of international collaborations, too much attention given to material rewards and quick results, corruption, and too many administrative controls and government regulations.

**Keywords** returnees, diaspora, innovation, Chinese higher education

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### Introduction

China wants talent. Its need is clear and urgent, as it presses forward towards ever higher levels of development with the immediate goal of creating a “moderately prosperous society.” This is also evident in the numerous talent plans and projects implemented at different levels by subdivisions of government, and various bureaus and organizations. In a knowledge society era, science and technology,

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research and development (R&D), and the goal of establishing “world class universities” are especially important pillars of development. Clear too is China’s eagerness to harness the abilities and knowledge of its highly talented returnees, and diaspora, who now number in their tens of millions<sup>1</sup>. Effective deployment of this enormous intellectual power through a range of programs and projects that aim to strengthen the quality of China’s human resources would certainly contribute to Chinese development, and notably strengthen its education system.

Plans to deploy China’s overseas talent are ambitious, and incentive schemes multiply, at national, provincial and institutional levels, especially among the most developed regions in China’s east. The Chinese government has employed a variety of means of pursuing its goal of developing and recruiting quality international human resources. Under national plans such as the *Twelfth Five-year Guideline* (2011–2015), *Medium-and Long-Term Human Resources Development Plan* (2010–2020), *Medium-and Long-Term Educational Reform and Development Plan* (2010–2020), etc., the range of high-level overseas talent recruitment schemes is almost a dozen, administered by a number of ministries and agencies such as the Organization Department Central Committee, CPC, and the State Administration of Foreign Expert Affairs (SAFEA; Welch & Cai, 2010). While SAFEA has recently developed a new program entitled the *Top Foreign Experts Project*, the Ministry of Education recently announced yet another scheme to improve Higher Education Institutions’ creativity (also named the *2011 Plan*), scheduled to commence in 2012, and to replace the *985 Project* from 2013. A 2011 issue of *China Daily* contained a two-page spread, highlighting the plans by Changchun, an industrial city in China’s northeast Jilin Province, to attract such “overseas background” talent. The “*ChangbaiHuigui*” *Personnel Plan for the Changchun High-Tech Industrial Development Area* expressed its determination to “establish a personnel pool of top people in various fields and a think-tank to ensure rapid, high-quality development” (China Daily, 2011, October 25, p. 6). The announcement and call for applications detailed substantial targets:

- 200 talented people who can develop industries, or innovations;
- 300 senior managers;
- 1,000 people with advanced skills.

Of this total, 15 were to meet national level *1,000 Talent Plan* (*qian ren jihua*) standards, while 40 more should meet Provincial level *100 Talent Plan* (*bai ren jihua*) levels and a further 30 were to meet “100 talents in the field of modern service in Jilin” qualification levels (China Daily, 2011, October 25, p. 7). While top domestic talent was also targeted within the specifications, it was no accident

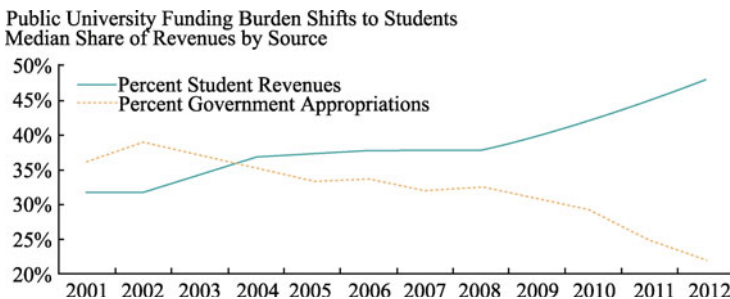
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<sup>1</sup> No one is entirely sure of the total size of the Chinese diaspora, but it generally agreed that the number is no less than 35 million, of whom increasing proportions are highly-skilled.

that the first to be described were “leading overseas personnel,” for whom the rewards, if chosen, were rich:

Start-up capital of 600,000–2,000,000 yuan ... , 50 million yuan for world class innovative team ... , as well as substantial space that was either rent-free, or subsidized, significant rental subsidy to those who purchased a residence in Changchun, and venture capital of 5 million yuan ... (China Daily, 2011, October 25, p. 6)

One source of such talent is returnees, who have multiplied in recent years in response to widening opportunities back home. China’s economic growth, averaging around 10% per annum since 1990, provides a pull factor, as the need for high-skilled personnel burgeons, along with the transformation of the economy, towards a more innovation-based society (OECD, 2004). A push factor consists of the global financial crisis that has reduced opportunities in a number of developed countries, as budgets for higher education are reduced, and jobs in universities and associated research facilities shrink. The scale of the shift from public to private financing of higher education in the US over the past decade is graphically captured in the following diagram (Fig. 1; see also Saxenian, 2006, pp. 335–336).



**Fig. 1** Reduced State Funding of U.S. Higher Education, 2001–2012.

Source: Moody’s as cited in Global Higher Ed., 2011, Austerity budgets, fiscal squeezes, and territorial obligations: The end of an era. Retrieved December 31, 2012, from <http://globalhighered.wordpress.com/2011/11/01/austerity-budgets/>

While the tally of personnel recruited to such schemes shows an overwhelming preference for overseas Chinese (*huaqiao*) talent, with some schemes registering more than 95% of recruits of such background (Cai, 2012), in principle the schemes are open to all foreign talent, and the latest revision of the *Recruitment Programme of Global Experts (qian ren jihua*, or One Thousand Talents) now includes a small section devoted to recruitment of Non-Ethnic Chinese Talents (NECTs). It was recently estimated that some 230,000 foreign workers, many of them high-skilled, had Chinese work permits by the end of

2010 (China Daily, 2011, November 4).

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## Returnees Old and New

Although China has long sent missions abroad to learn from the world beyond the Middle Kingdom (*zhongguo*), its attitude towards the knowledge learned from the world beyond its borders has not always been so positive. Maps of ancient China were drawn as a series of concentric arms: squares that radiated out from the center of civilization—the Middle Kingdom—to tributary states, such as current Vietnam and Korea, that enjoyed a measure of independence, within their tributary status (Bell, 2008, p. 34–35), and finally to barbarians at the outer perimeter. Much later, Admiral Zheng He's unique records of his voyages to South East Asia in the 1420s were subsequently destroyed after his return, upon the command of the Ming emperors, who deemed them valueless.

At times, the suspicion regarding outside influences was directed at only certain countries, as during the early years of the People's Republic of China:

Study abroad—unless undertaken in the then Soviet Union or Eastern Europe—was generally regarded as politically and culturally suspicious. Those who had studied in the bourgeois West, including the CEM [Chinese Educational Mission] students, were denounced as “running dogs” of imperialism and traitors. (Rhoads, 2011, p. 6; see also Ye, 2001, Bieler, 2004)

The period of the Cultural Revolution, also marked an era closed to much, if not all, of the outside world, amid a wider devastation of higher education from which China only began to recover in the “reform and opening” era, post 1978. Over a century earlier, in 1866, Woren, a well-known Qing official, had denounced Western knowledge and influence, evident in the establishment of the Beijing Translators College, as part of the Self-Strengthening Movement, in the following terms: “astronomy and mathematics are of very little use” he complained, compared to the traditional Chinese pursuits. “The way to establish a nation is to lay emphasis on propriety and righteousness, not on power and plotting” (Rhoads, 2011, p. 7).

On the other hand, in other periods, much greater receptivity was evident. Buddhism came to China, from India, more than 1,800 years ago, as a result of the visits of traveling monks. At a much later point, Emperor Qianlong, for example, was intensely interested in the contributions of foreign scholars and artists and gathered them to his court. In the 1860s, one hundred and twenty young scholars were sent to America, as part of the above-mentioned Self-Strengthening Movement. Although they were subsequently recalled, several made significant contributions on their return. And famous examples,

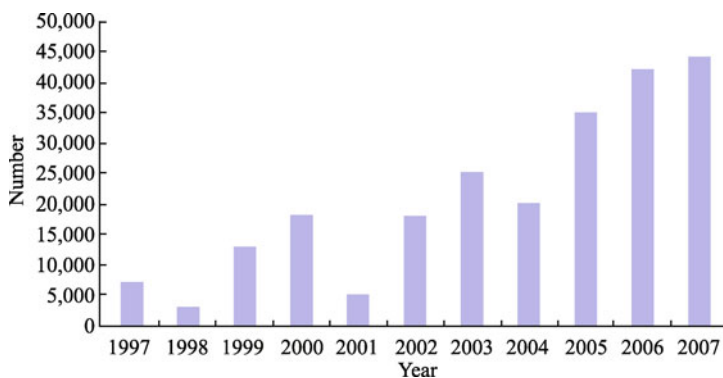
such as Cai Yuanpei (1868–1940), the first Minister of Education of the Chinese Republic, founder of *Academica Sinica*, and an early Chancellor of Peking University, had an enormous influence on the direction of Chinese higher education, after returning from his “journey to the West,” specifically Germany, and France (Zhang, 2000).

Historically, then, it is possible to discern in Chinese history a shifting dialectic, oscillating between more hermetic and more open stances towards the outside world; something that is associated to some extent with the tension between tradition and innovation. The current era is characterized by a marked openness. High-skilled returnees are valued, and compete very successfully in the job market (Hao & Welch, 2012). *Haigui*, as returnees with international qualifications and experience are termed, are very successful, and are now spread across a wide range of fields. One mark of change is seen in the political sphere, where for example, in the 16th National People’s Congress of CPC (2002),<sup>2</sup> 6% of Central Committee members had international educational experience. By the 17th Congress, held in 2007, the proportion had increased to around 10% (Xinhua News Agency, 2007). This greater embrace of international experience represents a major change in China’s political environment, sending an important signal to a range of professional fields across China. This includes higher education, where a substantial number of leaders now have some international experience. Returnees already dominate academic leadership in Chinese higher education. Seventy eight percent of presidents of universities under the direct control of the Ministry of Education have studied abroad, 63% of PhD supervisors, and 72% of the directors of the national and provincial key labs are returnees (Cai, 2010; Ministry of Education of the People’s Republic of China, 2004; Zhao, 2007). In addition, returned overseas-trained Chinese talents account for 81% of academicians at the Chinese Academy of Sciences, 54% at the Chinese Academy of Engineering, and 72% of chief scientists for the 863 Program, China’s government sponsored hi-tech project (Zhao, 2007). As of 2008, two ministers at the national level had overseas PhDs, while perhaps 100 officials at the vice-governor level and above have spent at least one year studying or researching overseas (Han & Zweig, 2010). Data from the Organization Department of the Central Committee of the CPC indicated that 72% of national “key project” leaders are returnees (Organization Department of Central Committee of the Communist Party of China, 2009). The increasing number of high-skilled professional workers is a further reflection of the shift towards a more knowledge based economy (Welch & Zhang, 2008).

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<sup>2</sup> Under the CPC Central Committee Political Bureau that is led by the President, members and the alternate members of the Central Committee of the CPC constitute the one of the most senior government groups. They are elected at each 5-year national congress of the CPC.

Brain drain, or talent loss, has long been lamented in China. Of the total of 1.39 million Chinese students who travelled abroad to study since 1978 (many sent and subsidized by the state), only about 390,000 have returned. As seen in Fig. 2, below, the rapid increase in the number and proportion of returnees in recent years, however, is indeed a striking phenomenon in contemporary China, and their contribution to and influence in society are now widely recognized as increasingly important (Zweig, 2002). There is now a growing “focus on brain circulation where skilled and professional workers move between wealthy nations or return to their homelands after migrating to another country” (Spring, 2009, p. 185). Much research shows that Chinese who have adopted the life-style, languages and culture of the countries in which they settled, can successfully manage their relations with the homeland and with their host countries (Wang & Wang, 2003). Therefore, what once was seen as brain drain in China is now often being seen more like a long-term brain investment. Saxenian’s (2006) research on first-generation immigrants like the Chinese in Silicon Valley highlights how their possession of the necessary language, cultural, and technical skills means they can function well in both America and China. She reveals how these commanding professional advantages can be extended through professional associations and networks, by enabling new as well as established ventures to be quickly identified, and by building partnerships with distant suppliers and customers. Chinese international students who chose to stay overseas rather than return home immediately on completing their studies are in fact valuable assets for China’s potential growth. In brief, what used to be categorized as a brain



**Fig. 2** Rising Rates of Students and Scholars Returnees, China, 1997–2007

*Note.* Adapted from A. Welch & H. X. Cai, 2010, “Enter the dragon: The internationalisation of China’s higher education system.” In J. Ryan (Ed.), *China’s higher education reform and internationalization* (pp. 9–33). London, England: Routledge, p. 14; National Bureau of Statistics of China, 2008, 中国统计年鉴 2008 [*China statistical yearbook 2008*]. 北京, 中国: 中华人民共和国国家统计局 [Beijing, China: National Bureau of Statistics of China].

drain, brain gain, and diaspora at different stages of development, has eventually become a circle due to complex economic and social dynamics triggered by globalization.

At the same time, young returnees, who spend some years abroad gaining some mastery of Western knowledge and culture often face issues reintegrating into their home society, which can be all the more significant in East Asian contexts (Goodman, 1990; Goodman, Imoto, & Toivonen, 2011; Hao & Welch, 2012; Namgung, 2009). Today's China displays a range of nationalist identities, which emerged from different historical eras and are often based on cultural, linguistic, religious, and regional factors (Tu, 1994). In addition to advanced academic knowledge, understanding of Western culture and international alumni networks, returnees should also demonstrate communication skills, and an in-depth understanding of the local culture and the business environment.

While some returnees struggle with effectively combining Western and Eastern values, others struggle with the choice over whether to work in state, private or foreign enterprises, or start their own business. They also fluctuate between wanting to fulfill their individual dreams, confronting the reality of possible un(der)employment, managing family pressure and duties, and meeting their sense of social responsibility, in other words supporting the nation. Hoffman (2006) argued that young Chinese professionals harbor neo-liberal ideas of self-development as well as late-socialist patriotism. One can sip a Starbucks latte and work for a foreign company, while also standing up for China in the world (as indeed many from the Chinese diaspora do).

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## **The Rise of the Chinese Knowledge Diaspora**

In the context of the increasing density and ubiquity of transnational knowledge networks, the phenomenon of the knowledge diaspora is becoming of growing importance (Welch & Zhang, 2008; Welch, Zhang, & Liu, 2005; Welch & Cai, 2010; Cai, 2010; Zweig, 2002; Zweig, Chung, & Han, 2008; Zweig & Devoretz, 2006; Yang & Welch, 2012). The dramatic transformation of the character of Chinese migration over the past century, particularly in recent decades, is an important part of the story. Saxenian (2006) shows that, of Silicon Valley's Asian population in the late 1990s, 77% of Indian residents held at least a masters degree, while for the Chinese Mainland and Taiwan residents the figure was even higher, 86% and 85% respectively (Kapur & McHale, 2006, p. 113). For Australia, which shows the highest net brain gain of all OECD countries (Docquier & Marfouk, 2006), the proportion of skilled migrants rose from 39.8% of the total in 1990–1991, to 46.8% by 2003–2004, while for certain groups, for example China-born migrants, it was more than half. Currently, of long term Chinese

immigrants to Australia, over 80% fall within the three highest occupational categories, while significant numbers have moved into academic posts, commonly after taking their PhD at an Australian university (Welch, Zhang, & Liu, 2005; Welch & Zhang, 2008; Yang & Welch, 2012). The increasing emphasis on the highly educated, strengthened by targeted immigration programs that have been mounted by countries such as the USA, Australia, and Canada in the last decade or more, is a further reflection of the change towards more knowledge-based economies (Hugo, 2002, 2006; Welch, 2010). The global circulation of epistemic currents, including among diasporic communities, is also part of this new orientation, which equally challenges our notion of space and place (Welch, 2010).

The worldwide Chinese knowledge diaspora is now of global importance, and features strongly within major national innovation systems in Western countries (Simon & Cao, 2009). National Science Foundation (2009) data shows that in 2008, 4,526 Chinese recipients received doctorates in the US (p. 1), more than twice the number of any other overseas nation. Other data reveal that, in 2007, Chinese scientists accounted for 32,000, or almost one-quarter, of the 142,000 foreign students receiving PhDs in the US (Cai, 2010); in 2007/08, Chinese accounted for 22% of all foreign scholars in US higher education institutions, with the average annual growth rate remaining between eight to nine percent from 1996/97 to 2007/08 (OECD, 2009, p. 128). As seen above, the impact of the global financial crisis (GFC) on U.S. higher education has deepened the impact of falling state support to higher education (in some states more than others, but widely); nonetheless the Chinese knowledge diaspora has continued to grow in size and strength, and there is still an absolute net outflow of Chinese students evident every year (particularly from science and engineering departments of key universities, such as Peking, and Tsinghua). At the same time, while the rate of returnees has risen significantly, there is evidence that the very best and brightest still fail to return (Cao, 2004, 2004, November). The Chinese knowledge diaspora, and its flows, are indeed complex.

While the data is much sparser, evidence of rising Sino-foreign cooperation is probably tied to greater numbers of Chinese scientists working in overseas research institutions (Adams, King, & Ma, 2009). All this makes the contribution of the Chinese knowledge diaspora to China's scientific development all the more strategic: Their established contribution to the national innovation systems (NIS) of the most developed countries, mastery of advanced processes and techniques, and willingness to contribute substantially, makes them uniquely able to boost Chinese R&D, and enhance the research capacity of Chinese universities.

In response, China changed policy direction in 2001, from *huiguo fuwu* (return and serve the homeland) to the more flexible *weiguo fuwu* (serve the homeland),



as part of which it has implemented an array of key Overseas Talent Recruitment schemes, that, as seen above, are targeting the large pool of high-talent overseas Chinese. To take advantage of this new climate, leading universities have introduced non-resident fellowship schemes, sometimes termed *yaling moshi*. Table 1, drawn from Welch and Cai (2010) gives some idea of the wide array of such schemes, their aims, and their responsible agencies or Ministries.

Saxenian (2006) has been one to point to the importance of the high-skilled diaspora in promoting advanced transnational scientific and business networks that underpin both R&D and the quest for world-class universities, also high-technology business enterprises/technology transfer. These are all key aims for China, in its development push.

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## China's Advantages

In global terms, China's size and weight constitute a key competitive advantage in efforts to deploy its high-skilled diaspora in the service of national development. Its determination to lift its scientific output comprises a second advantage: Its investment in R&D has been rising by around 19% annually for a number of years, in contrast to many other countries, including the most developed. China is now second only to the US in terms of overall scientific output, and leads the world in some fields, including nano technology in which it now produces more articles than any other country outside the US. Papers by China's scholars in major mainstream natural and social science journals rose from 1,293 in 1981 to 11,435 by 1995, and to 41,596 in science and engineering alone by 2005. Citations grew from 8,517 in 1981–1985, to 77,841 for 1993–1997. China's share of world scientific publications rose from 2% to 6.5% over the decade ending in 2004. Equally, Chinese patent applications now account for 3% of applications filed under the Patent Cooperation Treaty (PCT) of the World Intellectual Property Organization (WIPO) and are doubling every two years (OECD, 2008). Its share of science and engineering articles grew from 1.6% of the world total in 1998 to 5.9% by 2008. Citations rose from 0.6% of the world's total to 4.3%, over the same period (Yang & Welch, 2010).

Such progress is widely appreciated by the Chinese diaspora:

When I was at Fudan, I found out that the research there was quite good, much at the international level. I have seen this trend during recent years when I am invited to review manuscripts submitted to academic journals. Many authors are from the Chinese Mainland. There has been a great improvement in the quality of their work. Ten years ago, the quality was problematic, with poor English. Now, it is quite different. (Yang & Welch 2010, p. 603)

**Table 1** China's Overseas Talent Recruitment Schemes

Name	Responsible Authority	Origin of Program	Date of Inception	Eligibility	How Many Recruits	Aim	How does It Work	Disciplinary Range
100 Talents Program	China Academy of Sciences (CAS)	Introducing 100–200 talents from overseas as trans-century academic leaders. "100 Talents Program" is a general term for the program of introducing excellent talents to CAS. Since 1997, the "100 Talents Program" has been expanded to be two programs: "Bring in Outstanding Talents from Abroad" (for long-term) and "Domestic 100 Talents Program." Since 2001, "Overseas Celebrated Scholars Program" (short-term) has been established. It now consists of "Bring in Outstanding Talents from Abroad," "Domestic 100 Talents Program," "Project 100 Talents Program," and "Introduction of the Winner of the National Outstanding Youth Foundation to the '100 Talents Program'."	1994	Not older than 40 for those recruited from overseas. For domestic scholars those recruited from overseas who have already been assistant professors, they could be less older than 45. It is not restricted to overseas Chinese.	Through "100 Talents Program," CAS has attracted 1,122 overseas scholars among whom 178 in 2008.	To attract and cultivate young academic leaders for CAS and introduce outstanding talents from home and abroad.	1998–2000 1st phase of the Knowledge Innovation Project of the CAS; 2001–2005 2nd phase, 2006–2010 3rd phase in which CAS plans to introduce 500 scholars from overseas.	Mathematics and physics, chemistry, life sciences, medical sciences, earth sciences, information technological sciences, technological sciences.

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Name	Responsible Authority	Origin of Program	Date of Inception	Eligibility	How Many Recruits	Aim	How does It Work	Disciplinary Range
2 Changjiang Scholars Program (Chung Keong/YangTze River Scheme)	Ministry of Education (MOE)	Jointly set up by the MOE and the Li Ka Shing Foundation.	1998	Specialty-appointed professors should have doctorates and not older than 45 in natural sciences, and 50 in humanities and social sciences. Overseas applicants are normally assistant professors or above, and domestic applicants should be professors and are able to work in China for nine months a year. Chair professors are normally associate professors in foreign universities and are able to work in China for 3 months a year. It is not restricted to overseas Chinese.	From 1998 to 2007, 1,308 scholars, of whom 90% have over one year foreign education experience and 98% have doctorates, have become leaders in key research fields in 115 Chinese HEIs. Thirty eight of them became academicians of the CAS and the Chinese Academy of Engineering, and 81 become chief scientists of the 973 Project, China's government sponsored hi-tech project. Two hundred and fifty nine scholars are recruited directly from overseas or within three years after they returned from overseas.	To attract scholars from home and abroad to be academic leaders in the universities and form a group of innovation teams.	There are 100 specially-appointed professors and 100 Chair professors every year and the term is three years.	Almost all disciplines, including humanities and social sciences.

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Name	Responsible Authority	Origin of Program	Date of Inception	Eligibility	How Many Recruits	Aim	How does It Work	Disciplinary Range
3 1,000 Talents Scheme	The Organization Department of the Central Committee of the Communist Party of China (CPC)	The Thousand-Talents program is the highest level project of this kind to be funded by relevant government departments, led by the Organization Department of the Central Committee of the CPC. It aims to attract 1,000 high-level, foreign-educated, skilled Chinese or foreigners over the next 5 to 10 years to develop innovative, mostly scientific projects, in China. The recruits are expected to work at national universities, research centers or laboratories, central government and state-owned financial enterprises, or top scientific foundations, leading innovative projects that will boost China's development.	2008	People with full professorships or the equivalent in developed countries.	It plans to recruit 1,000 high level talents in the next 5-10 years.	To boost China's innovation capability, make key technology breakthrough, develop hi-tech industry, initiate new disciplines, promote the integration of the industry and research. In the next 5-10 years from 2008, they will work for national key innovation projects, key disciplines, key labs, state-owned enterprises and state-owned business and financial organizations, and hi-tech industry development zones.	Mainly in science and technology, but also in finance and economy.	

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Name	Responsible Authority	Origin of Program	Date of Inception	Eligibility	How Many Recruits	Aim	How does It Work	Disciplinary Range
4 "Chunhui Jihua" (Spring Light Program)	Ministry of Education (MOE)	It supports short-term returnees, which offers short-term (6-12 months) support for overseas Chinese with doctorates to work in China during their vacation.	1996	Chinese scholars who have doctorates and accomplished outstanding achievements, including those who have obtained long-term or permanent residency of foreign countries. It is restricted to overseas Chinese.	Since the program's establishment in 1996 approximately 200 groups, and 12,000 scholars have received grants.	To support Chinese scholars to make contribution to China in various ways. Especially for those who would like to do research and lecturing in Chinese universities during their sabbatical leave.	Awardees receive a generous salary, free housing, round-trip airfare, and insurance during their short-term work in China.	Science and technology, agriculture, medical sciences, life sciences.
5 National Outstanding Youth Foundation	The National Natural Science Foundation of China (NSFC)	Founded in 1994, with the support of the then Prime Minister Li Peng, the program aimed to attract overseas talented Chinese to return home.	1994	Not older than 45. Applicants are PhDs or associate professors or above. It is not restricted to overseas Chinese. Most awardees are Chinese citizens.	From 1994 to 2004, this foundation supported 1,174 young scholars among whom 366 have foreign doctorates, taking 32.8%.	To promote the growth of young talented people, encourage the overseas scholars to return to China, and accelerate the cultivation of leading scientists for China. It also supports young scholars who stay overseas but will return to China in a short time.	Chinese nationals who are under age 45 and obtained PhD degree are the basic requirements to apply the funds.	Natural science and applied basic research.

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Name	Responsible Authority	Origin of Program	Date of Inception	Eligibility	How Many Recruits	Aim	How does It Work	Disciplinary Range
6 International Partnership Program for Creative Research Teams	China Academy of Sciences & the State Administration of Foreign Experts Affairs of the People's Republic of China (SAFEA)	Part of the knowledge innovation project of CAS, and most overseas scholars are introduced through "Overseas Celebrated Scholars Program" (for short-term visits).	2001	Associate professors or professors in famous foreign universities who can work in the CAS for no less than 3 months a year and have no concurrent position in other institution. Those of Chinese origin should account for no less than 2/3 of all the overseas scholars recruited. It is not restricted to overseas Chinese and non-Chinese scholars are also participants.	By the end of 2005, 35 creative research teams were formed where 224 overseas scholars and 362 domestic scholars worked for the program.	To promote the development of key discipline, the interaction among different disciplines, cultivate and retain a cohort of high level talent, and enhance the status and competitive capacity.	Each overseas scholar will receive 1 million RMB as research funding and each team will receive maximum support of 6 million RMB (1.5 million Australian dollars).	Mathematics and physics, chemistry, life sciences, medical sciences, earth sciences, information technological sciences, technological sciences.

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Name	Responsible Authority	Origin of Program	Date of Inception	Eligibility	How Many Recruits	Aim	How does It Work	Disciplinary Range
7 The Program of Introducing Talents of Discipline to Universities (the 111 Project)	Ministry of Education (MOE) & the State Administration of Foreign Experts Affairs of the People's Republic of China (SAFEA)	Part of the endeavour to build some Chinese universities into world class universities	2006	Overseas scholars from the top 100 universities and research institutes worldwide. It is not restricted to overseas Chinese and non-Chinese scholars are also participants.	Over 1,000 foreign scholars were recruited. In 2007 alone, there were two Nobel Prize winners, 40 academicians from 10 countries and 400 scholars with professorial title from 29 countries. More than 500 domestic scholars and experts, including 17 academicians and 72 Changjiang Scholars, worked in 77 bases in the first two years of the 111 Project.	To recruit about 1,000 overseas talents from the top 100 universities and research institutes worldwide. These experts will team up with domestic faculty members to establish 100 innovation research bases in Chinese universities. It aims to enhance the disciplinary international competitive power and comprehensive level and status of Chinese universities in the world.	Largely in science and technology, some are in medical sciences, life sciences, botany, agriculture, and engineering.	

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Name	Responsible Authority	Origin of Program	Date of Inception	Eligibility	How Many Recruits	Aim	How does It Work	Disciplinary Range
8 "HOME" Program (Help Our Motherland through Elite Intellectual Resources from Overseas)	China Association for Science and Technology	Related to the national strategy of <i>Kejiao Xingguo</i> (building China through science and education) and <i>Rencai qianguo</i> (strengthening the national economy by developing human talent), this program commenced in 2004. It aimed to build a standard and efficient working mechanism, to liaise and encourage more overseas scientists to boost China's development.	2004	It is restricted to overseas Chinese.	By 2008, sixty four overseas scientific organizations participated in the program. 375 overseas scholars returned to China and participated in 156 projects in IT, agriculture, education, biomedicine, etc.	To promote the cooperation and exchanges between non-governmental scientific organizations, provide platform for overseas S&T personnel to return through seminar, short term part-time work, technical training, and consulting for the domestic organization.	Science and technology.	
9 Returned Overseas Chinese scholars Entrepreneur Week	Central Committee of the Chinese Communist Youth League, All-China Federation of Youth, Western Returned Scholars Association	The rationale was to further develop overseas young talents' resources, and to lead them to contribute to China's development through innovation and entrepreneurship.	2001	It is restricted to overseas Chinese.	From 2001 to 2008, 3,400 scholars from 26 countries returned and participated in this activity.	Create a good platform for talented overseas young Chinese to develop their careers through meeting with successful returnee entrepreneurs and government officials.		

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Name	Responsible Authority	Origin of Program	Date of Inception	Eligibility	How Many Recruits	Aim	How does It Work	Disciplinary Range
10 Overseas Talents Serving Country Program	Overseas Chinese Affairs Office of the State Council	This program focuses more on servicing returnees through supports in policy, finance, and information, depending on different local departments' sub-programs.	2005	It is restricted to overseas Chinese.	From 2005 to 2007, Overseas Chinese Affairs Office of the State Council invited 1,000 overseas Chinese with 1,200 hi-tech projects to communicate with domestic enterprises. In 2006, 1500 overseas Chinese participated in the activities themed in economy and S&T and 300 of them found business partners.	To promote service to overseas Chinese and attract them to open business in China. Recruit talents especially overseas Chinese to serve the country.		

Note. Adapted from A. Welch & H. X. Cai, 2010, "Enter the dragon: The internationalisation of China's higher education system." In J. Ryan (Ed.), *China's higher education reform and internationalization* (pp. 9–33). London, England: Routledge, pp. 19–25.

A third relevant factor has been the organization of its higher education system, which is perhaps the most clearly stratified of all, in global terms. Programs such as 211, which planned to develop 100 leading universities and key disciplines, by providing substantial additional investment, and the even more selective 985 Project that has invested substantial sums into some 46 key universities in an attempt to develop some world-class institutions, linking additional funding to enhanced performance expectations, if not always clearly specified (Yang & Welch, 2010; Mohrmann & Wang, 2010). The latter scheme has components that allow the deployment of foreign talents, related to the *Outline of the National Medium and Long-Term Program for Education Reform and Development (2010–2020)* that includes the target of achieving world-class status for at least some of its universities by 2020. A final and significant advantage consists of the virtually ubiquitous willingness of the Chinese knowledge diaspora to assist in China's development, based on a sense of culture and identity that transcends political allegiances. A major research project focusing on just such individuals, in both Australia and Canada, that interviewed approximately 100 academic staff in six universities, revealed wide spread interest and pride in China's development and an almost universal desire to serve national development, irrespective of whether such individuals remained abroad or not. For such high-skilled researchers and teachers, *yaling moshi* made sense in personal terms. Even if they remained abroad, their links to their former homeland remained strong: They travelled back to China, taught short courses, participated in the Overseas Talent Recruitment schemes, engaged in transnational research networks, and sought out potential PhD candidates who would become the next generation to lead China's scientific development (Yang & Welch, 2010). The increasing ubiquity and density of information and communications technologies (ICTs) is assisting in the maintenance of such dense transnational knowledge networks, and respondents reported regular forms of professional communication, often several times a week, even daily.

The impact of such networks should not be underestimated. China's quest to become an innovation society is underpinned in no small measure by the efforts and willingness of its substantial knowledge diaspora, especially in countries of migration such as the US, Canada, and Australia, where high-skilled Chinese are increasingly populating university departments, and research laboratories. The location of such individuals at the heart of the powerful English-language scientific network, with its top-quality journals and leading institutions, provides an important bridge to the Chinese scientific world, and a means to introduce important methodological and technical innovations. It is clear that such forms of cooperation assist both sides: working with leading departments, teams and laboratories in China is helping to promote scientific development in the homeland, as well as having advantages for universities and R&D in the bridging countries. The familiarity of the Chinese knowledge diaspora with the worlds of

science, both East and West, make them important bridges and facilitators. Shared linguistic and cultural understandings promote familiarity and ease of communications between the Chinese knowledge diaspora, and colleagues in China.

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## Limits to Success

At the same time, there are qualifications that limit the effectiveness with which such knowledge bridges operate. Perhaps the first is that, as recent reviews of the Chinese innovation system agree, China's scientific rise is more impressive in quantitative rather than in qualitative terms (Adams, King, & Ma, 2009; Simon & Cao, 2009; OECD 2008). While it is true that more and more research from the Chinese Mainland is now found in leading journals, the dizzying rise in Chinese scientific production is not matched by an equivalent rise in citations, patents and other such indicators of high-quality research.

A second qualification is a certain reservation with respect to the innovations brought by those who seek to impart or import new ideas and ways of working. In East Asia particularly, longstanding notions of hierarchy, respect for age, and traditional ways, in Confucian-influenced societies, are associated with the common phenomenon of jealousy, and lack of acceptance of new ideas, by returnees and overseas based partners, with foreign qualifications, linguistic facility, and experience. While this is less true in China than in Japan, and Korea (Welch, 2005; Namgung, 2009; Goodman, 1990; Mochizuki, 2004; Yang, 2002), it can nonetheless constitute a limit to more effective engagement, as some interviewees, notably women and younger, more junior researchers reported. Local financial, political, and regulatory conditions at times inhibit technological development, in addition to perceptions that those with significant overseas experience and returnees are no longer "true" locals. At times, interviewees lamented, after an initial enthusiastic reception in China, and promises of further collaboration, no follow-up ensued, despite repeated attempts on their part. This led to a degree of frustration: "...where can I find a bridge for building the linkage? There is no answer" (Welch & Zhang, 2008; also see Yang & Welch, 2010). Some interviewees oscillated between positive and negative responses, after attempts to build collaboration failed. Too often in practice, such interviewees responded, the mission of the delegation often ended when their visit ended. This led to frustration and disappointment, with some uncertain as to how to proceed.

Some diasporic individuals also reported that their commitment to building knowledge bridges with China were not always valued highly enough. Reports from a major Australian university included the following, from diverse fields:

My faculty just wants us to be academics. If there is anything between China and Australia, they would want us to do it. But I do not feel obviously encouraged to build bridges to China. (Interview-CAE-1)

Compared with other Australian universities, Ivy has paid less attention to collaborations with Chinese universities, at least in my field. (Interview-ASS-11)

I really want to set up collaboration with the Mainland scholars, especially when China develops so fast. But it is somewhat ironic that there is little collaboration in Engineering with Mainland universities. We even have few doctoral students from China. (Interview-CQE-4; Yang & Welch, 2010)

Others reported that, for a variety of reasons, Chinese colleagues too often concentrated on material rewards, and short term results, rather than prioritizing long-term, basic research:

Professors have more pressure to survive in their life. I mean financial life. Many are in fact very good, but they just can't focus on research. (Interview-CAE-1)

In China, some top scientists are not interested in doing the real work, almost like brokers. They take a certain percentage of their research grants. They like to do consultancy. Once people become famous they always want to assess projects, review proposals and go to meetings to get paid. This tendency is growing, compared to years ago. (Interview-SCW-2; Yang & Welch, 2010, p. 600)

Indeed, reports of corruption in universities are now widespread in China, and do little to increase confidence by the diaspora in the prospects for solid scientific collaboration.

...a lot of the Mainland's investment in science and technology was lost to corruption. A substantial amount of the scientific research funds are being spent on meetings, trips or buying expensive equipment that is rarely used. Some (Chinese scientists) even resort to stealing others' work, or simply making up the data to get a paper published. Most of these junk papers can be only published in domestic journals and are not cited even once. (Chen & Chow, 2010, September; see also Yang & Welch, 2010)

Freedom from administrative controls and government regulations in Chinese universities constitutes another challenge to effective collaboration with the knowledge diaspora, who at times express frustration with the extent of administrative interference. They are not alone; some Chinese colleagues report similar frustrations (Shen, 2000; Yang & Welch, 2012; Levin, 2010). But for world class academic work to proceed, a degree of openness and freedom to follow one's academic interests is critical, as the great Cai Yuanpei intended for

Peking University in his letter on Academic Freedom (Zhang, 2000). In practice, it has not been so simple, as the President of Yale University recently underscored:

In one respect, however, India has a powerful advantage over China, at least for now. It affords faculty the freedom to pursue their intellectual interests wherever they may lead and allows students and faculty alike to express, and thus test, their most heretical and unconventional theories—freedoms that are an indispensable feature of any great university. (Levin, 2010)

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## Conclusion

Both returnees and the Chinese knowledge diaspora represent important pools of expertise and experience in China's global quest for talent. For the former, returnees directly link their country of origin to the outside world by utilizing their knowledge and overseas experiences at their work places in China. They are seen as improving the home country's productivity and international competitiveness through the direct transfer of knowledge and the indirect benefits brought by overseas professional and trade networks (Thorn & Holm-Nielsen, 2006; Welch, Zhang, & Liu 2005; World Bank, 2003; Zweig, 2006a, 2006b). However, at the same time, reintegration is a challenge for many young returnees in today's fast-changing China. Merely practicing their international knowledge learnt overseas will not help them succeed in the home country. With a civilization more than 2,000 years old, China displays distinct cultural features, despite integrating into a global world that is shaped by many Western theories and rules. Hence, rather than acting like a foreigner in China, returnees can best utilize their advantage to serve as a bridge between China and the rest of the world, by quickly re-integrating into the home culture and thereby contributing to the society's development via efficient knowledge transfer.

The potential of the Chinese knowledge diaspora is also great: as part of the wider phenomenon of increased global mobility, undergirded by denser and more ubiquitous information technology, the transnational networks they establish can help significantly to tilt previously unequal knowledge flows towards countries such as China, and create far more complex and decentralized, two-way networks of exchange. Once seen as a permanent loss, the exodus of the highly skilled is now more often seen in much more nuanced terms, as both a loss and a potential gain for the country of origin, and as an important knowledge bridge between host countries and China.

Nonetheless, for such links to be effective, and for returnees to be used effectively, good leadership is required, from governments and institutions on both sides. Support and follow-through are required. Corruption in higher

education needs to be addressed, and a greater emphasis on basic research, rather than short-term results, and amassing numerous, low-level publications. A greater degree of independence from administrative hierarchies, and government regulation, is also needed for research excellence to flourish. Ultimately, good will and a certain openness is needed by colleagues from both sides, to the respective values and practices of East and West, as the following two quotations from respected Chinese scholars from the 17th and 20th century indicate:

Like Westerners, who have never heard of the teachings of Chinese sages, I've never before known the writings of the Western saints. Today we are illuminating and inspiring each other. As people in the world share one mind, we are not to fail in the communication between East and West. (Feng Yingjing, 1555–1606)

Regarding the method for establishing this synthesis, it is essential at first to understand the scientific spirit of the West. Then this scientific spirit can be employed to shift China's traditional doctrines, and only by so doing can a new vision be discovered. (Cai, Yuanpei, as cited in Zhang, 2000)

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