

From Brain Drain to Brain Gain: Countries Engaging Their Diasporas

By Abdoulaye Gueye

Introduction

The popular view of the scientific community today is that it is a global one—autonomous, unchained by national boundaries, and seemingly beyond the dividing lines of race and culture. Members of this community are free to do what they wish in their research: to reach out to one another, to share ideas, and to produce knowledge on their own terms. Their purpose is to create a commonwealth of ideas that benefits all of humanity. The 18th-century German mathematician and philosopher, Gottfried W. Leibniz, famously said of science that: “The country where it thrives will always be the dearest to me, because the whole human species will take advantage of it” (1712: 502–503). And Louis Pasteur also once asserted that “science knows no country, because knowledge belongs to humanity” (quoted by Lercher, 1999).

However, governments do not always share that open conception of science. Whether openly or covertly, their dominant idea seems to be that their own scientific communities should be national in their orientation and goals. Indeed, states usually treat academics just as they do the rest of their citizens: they view them as responsible for promoting the country through their professional activities. The results of their scientific inquiries are expected to benefit their own country and people, first and foremost.

In line with this nationalist approach to scientific activity, it is not surprising that a pervasive debate rages regarding the migration of highly skilled workers from one country to another. This debate, which is at least half a century old, first originated in Western countries, though it has since spread around the world. In modern days, Britain and Germany were arguably the first to recognize this issue and bring it to public attention, in government and academic discussions. Ever since the 1950s Britain has been lamenting the loss of highly qualified workers to other countries. In an illuminating 2009 report, Brian Balmer, Jane Gregory, and Matthew Godwin quote a British official grumbling in 1963 about intellectual poaching by “large and affluent” American universities and industries, saying that the other country had “deliberately set about robbing the rest of the world of the best of its qualified manpower” (24). At a time when Britain was in dire need of human capital to rebuild the infrastructures crippled by WWII, the US was strategically trying to lure hundreds of academics and professionals to its own shores. (Balmer et al. also describe the origin of the concept of the “brain drain,” a phrase that appeared for the first time in the *Evening Standard* national newspaper in 1963.)

Another of the first countries to be seriously hit by brain drain was Germany. By the late 1930s the rise of the Nazi regime, and the social politics of Aryanization, were forcing hundreds of Jewish professionals and scholars to flee the country. Many of them settled in the United States, where they contributed largely to scientific and technological development there. Before the war, for many decades Germany had led the race to earn Nobel Prizes. After the war, thanks to those expatriates, America now began its rise to scientific prominence, and started to collect more awards. The link between the migration of skilled professionals, and a national decline in productivity, was first theorized by scholars such as James G. Crowther, in 1967.

Nor are Western countries the only ones to suffer from brain drain. A score of third-world regions have also been struck by it, notably India, China, and Colombia. But by the end of the 20th century, most such countries had become aware of the phenomenon; and they were deliberately working to retain their experts, and to attract back those who had already left.

This report research attempts to address the link (if any) between the emigration of a country's skilled professionals, and the underperformance of the country's economy (Crowther, 1967; Adams, 1968). Since the early 1960s a large body of scholarship has been devoted to this issue, by scholars from many nations; and my study aims to contribute to that literature. I try to look beyond the basic fact of brain drain, and address as well the various strategies of countries wishing to attract back their nationals living abroad. Such a dynamic is known in the recent literature on brain drain as "diaspora option," or sometimes "brain circulation." (Gueye, 2019; Gaillard & Gaillard, 1997; Meyer, Charum & al., 1997).

In this study, I pursue three goals. First, I offer a socio-historical perspective of the movement of skilled people from certain countries—particularly China, India, Germany, and Colombia—to other countries, chiefly the United States. I examine the higher education systems in those countries, and their political and economic situations, based on the hypothesis that the shortage of universities in an economically deprived country tends to cause its young population to travel abroad to gain an education.

I chose these particular countries to examine for several reasons. First, they have created initiatives to bring back their nationals living abroad, or at least to tap into their knowledge. Second, they are characterized by different political approaches, which offers valuable possibilities for comparison: Germany has a federal and democratic system, India as well, China is authoritarian and Colombia has a centralized system.

Third, the countries' levels of economic development are unequal, which likely affects the success of their policies. All these factors may explain the unequal outcomes of their respective initiatives.

My second goal is to highlight the various strategies the home countries have devised to retain or lure back their expatriates. To this end, I pose three questions:

- What mechanisms are those countries using to reconnect with their diasporas?
- What incentives do they offer their expatriated experts to return?
- What are the outcomes of these strategies?

My third goal is a more modest one. It is merely to recommend a series of actions that could benefit African countries striving to attract back their qualified nationals. I describe these in the final section of the paper.

Methodology

This study is based on two strategies. The first was mostly desk research, aimed at gathering as much data as possible on the policies implemented to combat brain drain. I spent hundreds of hours in university libraries, and in the reading rooms of some relevant organizations. Harvard University's Yenching library was an excellent resource for information about China and India. (My research assistant, Xiaoxi Wang, helped me to translate into English all the documents written in Mandarin.) I also used the library of Harvard's Graduate School of Education, as well as the university's Belfer Center for Science and International Affairs. Another valuable institution for my research was UNESCO, whose Paris archives and library are full of rich statistical data. And in each location I visited, I took advantage of the opportunity to peruse as many local archives and documents as I could.

The second strategy consisted of travelling abroad to conduct a series of in-person interviews with senior officials at various institutions. In Bonn and in Berlin, I spoke with two representatives of the Deutscher Akademischer Austausch-Dienst (DAAD known in English as the German Academic Exchange Service—a support organization for international academic cooperation. In Berlin, I also spoke with two officers from the German Scholars Organization (GSO). However, I was unsuccessful in my attempt to contact two returned emigrants, whose perspectives I believe would have enriched this study.)

In Boston, I interviewed two professors of Chinese origin who worked there. And from my home base in Ottawa, Ontario, I used Skype to interview two more professors of Chinese descent, who had recently returned to China from abroad to accept research and teaching positions. Also via Skype, I spoke with a professor who had just returned to his native India after working abroad for several years. Finally, I consulted an academic of Indian descent who was born in North America, and still works here. (To protect the anonymity of these interviewees, as per my university's regulations, I used aliases to identify them whenever necessary.)

Studying the Colombian situation turned out to be problematic, however. I faced two hurdles. One is the relatively insignificant diaspora from that country, whose policies have apparently not changed much in more than twenty years. The second hurdle was my failure to connect with a local academic to collaborate with. As a result, the little data available to me pertains mostly to the country's level of brain drain, rather than to any official policies on repatriation. Though I considered excluding Colombia from this study, eventually I decided to include it—if only because Colombia's experiences offer other countries the opportunity to learn from its shortcomings.

My interviewees fell into three main categories:

- policymakers and administrators
- academics who emigrated, then returned home
- academics who emigrated, and still live abroad.

Because of this, the questionnaires I designed to guide my interviews were slightly adapted for each category of people I spoke with.

Questionnaire #1 (for representatives of organizations)

- When did your organization first become interested in this issue?
- What are the main factors that guide your policy?
- How do you connect with the emigrants?
- How do you collaborate with other institutions on this matter?
- Does your institution ever concern itself with the reverse process: other countries losing their expertise to your country?
- What resources do you use to persuade your expatriates to come back to their own country?
- How do you assess the efforts of your government to engage with the diaspora?

Questionnaire #2 (for returnees to their countries)

- How would you describe your professional situation while abroad?
- What motivated you to return to your country of origin?
- Is this move likely the last one for you, or might you still migrate again?

What factors could trigger another migration for you?

- How would describe your current professional situation in your country?

Questionnaire #3 (for non-returnees still living abroad)

- Are you aware of the efforts of your own country to attract back its diaspora?
- Would you consider going back, or at least engaging with your country from here?
- What factors would influence you in such a decision?
- How would you describe your relationship with your own country?

I believe that this methodological approach – including a rich body of written documents and interviews with people directly involved with this dynamic—is the most suitable one for an in-depth analysis of both the “push” and the “pull” factors that affect the issues of brain drain and brain gain. I also attempt to assess both the structural and non-structural conditions leading to expatriation. As well, I look at the reverse attitude: expatriates engaging with their country of origin. My approach follows Weber’s suggestion that researchers should pay attention to the meanings that social actors attribute to their own practices.

In the following section, I first describe the educational systems of China, India, Colombia, and Germany. This will enable me to analyze the main causes of mobility. The tardy creation of an education system, or its low quality or incompleteness, are factors that might well persuade ambitious young people to seek knowledge abroad. A sizable discrepancy between a country’s development goals, and the quality of its education system, is likely to prompt emigration—sometimes even with the support of the government.

In the second section, I examine the characteristics of brain drain, drawing on the literature of statistics and historical studies to gain a comparative perspective on the migration of skilled citizens. The third section deals with the incentives implemented by

states to bring back their diaspora members—or, if not, to at least tap into their expertise for the nation's benefit. I examine the policies used, and their outcomes. The fourth section, the final and the shortest, proposes some recommendations for states faced with the issue of brain drain. These derive from my observations and analysis of the experiences of China, India, Germany, and Colombia.

Education and the Creation of National Elites

Nationalism as we know it today first arose in the 19th century, as Eric Hobsbawm and Terence Ranger pointed out (1983). All attempts at nationalism require the formation of an elite class, generally through the process of education. The necessity of an educated elite is not restricted merely to the actual task of this group, which is to administer the country's economic development. The elite is also responsible for many other functions, including the creation of a national narrative to cement the nation's sense of itself. This narrative brings together all the peoples inhabiting the same territory by providing them with a shared history (sometimes fictive), and therefore a sentiment of belonging. However, in this study, I confine myself to considering the purely economic function.

China's Thousand Years Old Education System

China has one of the oldest educational systems in the world. Thanks to their elaborate written alphabet, the Chinese ruling classes established professional institutions to serve as formal spaces for the transmission of knowledge. The first of these appeared during the Xia dynasty, between 1070 and 1600 AD. As in many contemporary societies, though, the opportunity to attend these schools was unequally distributed: they were reserved for the children of Chinese nobility (Rhoads, 2011). But as the Chinese labour force increased significantly, and members of lower social classes also wanted their children to have access to the means of upward mobility, education was extended to

them as well. However, this extension did not dismantle the mechanism of inequality; it merely produced a dual-stream education system. The state schools were exclusively for the offspring of the nobility, offering a comprehensive education from elementary-school to college levels. The lower classes attended the village schools, which had only four levels, from elementary to what today we would call high school. (That said, it was occasionally possible for the brightest children from village schools to be admitted to a college.)

Before the Communist Revolution, Chinese society boasted many government-funded imperial colleges, the legacies of successive ruling dynasties. The first were the initiatives of the Emperor Wu (156–187 AD), a member of the Han dynasty. These colleges recruited the most learned scholars, with the goal of training the best talents in the country to administer the dynasty in various positions. From 115–144 AD, some 30,000 young Chinese men were trained in imperial colleges. These schools were supplemented by professional academies. As the governance of the Chinese empire became more sophisticated, and its bureaucracy expanded, the process for recruiting civil servants became tougher. Despite the clear advantage bestowed by high social background, the selection process for candidates could in fact be described as meritocratic. The Sui dynasty (581–618 AD) implemented a national examination system to select government officials from throughout the nation—a mechanism that was used to recruit civil servants at the county, the provincial, and the imperial levels. Candidates who were ranked at the top of the county level were invited to take another examination to qualify for provincial positions; if successful, they were then eligible to participate in the examination for the national level.

During its dynastic period, China probably owed most of its scientific and technological achievements to this meritocratic education system. The inventions of printing, of the

compass, and of gunpowder—all unknown to other ancient civilizations, such as the Greeks—were among the notable achievements of this time (Amey, 2006). However, these impressive achievements failed to curb the rising might of Europe in the mid-19th century. The arrival of Europeans (mostly British) suddenly exposed China to new ideas, new ways of managing relations between peoples, and new social pressures. Armed with gunboats, and eager to profit from trade, the European powers challenged Chinese supremacy. China’s policy of isolating itself from outside influences, and its refusal to open up its borders to commerce—particularly in tea and opium—resulted in the two Opium Wars: from 1839 to 1842, and from 1856 to 1860. Even though the Chinese army outnumbered the British, it was defeated (ironically) by the then-unmatched firepower of the British navy. As Ruth Hayhoe and Yongling Lu write in their 2004 article, China—“once the cultural and intellectual centre of East Asian civilization”—now found itself “unable to stand up to incursions from Britain and France.” Even more humiliating, “it was clearly falling behind its former pupil, Japan” (269).

In the aftermath of this defeat, the Chinese ruling class debated how best to restore the grandeur of its former empire. One faction advocated for the reinvention of the government along the lines of the Western model, introducing “advanced knowledge from the West, and ... Western-style universities” (Lu & Hayhoe, 2004: 269). They pointed to the happy experience of neighbouring Japan, which had embraced modernization years earlier. Under the Meiji dynasty, Japan had sent over 200 students abroad to study in American universities. Modernizing the empire required subscribing to Western political ideals, technological inventions, and educational models (Rhoads, 2011). This was a long process, culminating in the creation of the Imperial University of Beijing in 1898. (In 1911, after the Revolution, it became known as the National

University of Beijing.) The university was modelled on Western institutions, divided into specialized schools headed by appointed deans.

The Chinese policy of modernization was achieved in two stages. The first consisted of reproducing the Western education system on Chinese soil. Most of the teachers were European-descendant nationals. The second stage of the China's modernization was intended to break away from this dependency on Western experts in the short run. The strategy favored by the Qing dynasty was the development of a study abroad program. A handful of Chinese citizens have studied abroad previously. Japan, in particular, due to its geographical proximity and its great assimilation of Western technology had been a prime destination for Chinese students. Indeed, by the end of the early 20th century, Japan institutions of higher learning had attracted more than ten thousand Chinese students (Hiroshi,1987; Ichiko, 1978; Lu & Hayhoe, 2004). Outside the Asian continent, US universities have enrolled some of the largest cohorts of Chinese citizens. Although many of them benefitted from the Chinese state support, a significant number was sponsored by foreign religious congregations established in China.

The Qing dynasty study abroad program was an institutional scheme whose goal was to provide China with key national experts in a brief period of time. In this view, the ruling class set up a project named the Chinese Educational Mission (CEM). In 1872, the government sponsored 120 young Chinese males to pursue their education in the US for a 15-year period, although the mission returned to China ten years later (Rhoads, 2011). Some of the major characteristics of this cohort were its relatively low average age—indeed, 77.5 per cent of the group was between twelve and sixteen years old—and the overwhelming concentration of its recruits in two major Chinese provinces, Guangdong earning the lion share as the native province of eighty-three of the recruits, Jiangsu providing the CEM twenty-two of the recruits, Zhejiang eight of them, and the

remaining of the students hailing from the provinces of Anhui (four), Fujian (two), and Shandong (one).

The idea of this study program germinated in the brain of Yung Wing, whose own trajectory is worth mentioning in some regards. Of humble extraction, Wing has studied with white Protestant educators. He attended the Morrison Education School, an institution founded by the Western missionaries. After Wing's graduation from Morrison, the school headmaster, Rev. Samuel R. Brown arranged for the departure of Wing and two others of his students to follow him to the US. Wing was enrolled in Monson Academy, a middle and high school located in Monson, MA. In 1850, he integrated Yale University, from which he graduated. After seven and a half year in the US, Wing returned to China. Struggling to find in the Chinese public administration a professional position commensurate with his Western qualifications, due to his lack of the Confucius education, Wing became self-employed. But as the Self-Strengthening movement—a sociocultural and political dynamic which aimed at restoring the grandeur of China—got traction, Wing's professional and political fate changed. In 1863, he was introduced in the inner circle of the Qing administration. Thanks to his knowledge of Western culture and English language, he was integrated as an expert on foreign matters in the staff of Zeng Guofan, the chief officer in charge of repressing the Taiping Rebellion. It's very first mission was to serve as the state envoy to the US to purchase the machinery that will form the basis of the Jiangnan Arsenal.

Wing's success in this mission reinforced its status within the administration. Consulted on various matters by his superiors, and aware of the positive reception of his ideas, he, delving in his own trajectory and experience, suggested that the Qing administration sent a large group of young Chinese to study for a long period to the US. From this suggestion stems the CEM (Rhoads, 2011: 7–8).

The CEM is considered the first major influx of Chinese students in the US institutions of higher education. In the history of Chinese student migrants two other significant influxes, all of which encouraged by the central state, have followed. The second influx spans on a three-decade period (1909–1939). During this period, several hundred Chinese students and scholars frequented US colleges and universities. The funding for these Chinese education in the US was mainly assumed by the US through the remittances of the Boxer Indemnity. This term, “Boxer Indemnity” refers to a historical development in the economic and political relations between China, on the one hand, and the Western powers, on the other (Litten, 2009; Rhoads, 2011). When in 1899, the Boxers, a group of spiritual martial art fighters attacked Western economic interests in China and assassinated Western nationals whom they accused of polluting morally the country and depleting its resources with the complicity of the Qing dynasty, the Western powers forming a nine-country alliance retaliated and cracked down the rebellion. In the aftermath of this war, the Qing dynasty was forced to pay reparation to these countries, through an agreement named “Boxer Protocol” signed in 1900. Later on, the Chinese government realized that the amount paid to the US was much higher than what the US claimed initially. The country engaged thereafter in an international campaign to be reimbursed. Reacting to the US reluctance to reimburse, China resorted to a boycott of US interests. As this boycott negative impact on US economy became more and more obvious, President Roosevelt struck a deal with the Chinese government. It offered to convert the money owed to China into scholarships for Chinese students and scholars to be trained in the US. By the mid 1920s, more than 1,600 Chinese students and scholars were able to attend US academic institutions through the “Boxer Indemnity.” In many respect, Roosevelt’s strategy is a sound one, as it strikes two birds with one stone. First, it allowed the US to ease its economic and political relations with China. Second, it

provides the US with potential allies within the Chinese elite. Indeed, those scholars familiarized with the American culture, upon their return, would be both citizens of China and cultural ambassadors of the US.

In the wake of the Communist Revolution and the founding of the People's Republic of China, this country severed ties for almost 30 years with most of the liberal democracies preserving only relationship with its communist counterparts. The geographical scope of Chinese student mobility reduced as a consequence, leaving them mostly with the choice of pursuing their studies in the former USSR and Eastern European countries. But the rise to leadership of Den Xiaoping in 1978 hastened a political and economic rearrangement captured under the expression "*gaige kaifang*," meaning reform and opening. Soon upon its election at the head of the Communist Party and therefore the Chinese state, Den Xiaoping announced its intention to rekindle the old policy of sending anew students to the West (Yingjie, 2008:99). The following figures arguably speak for the materialization of his vision. In 1949, the year of the declaration of the Popular Republic of China by the Communist revolutionaries under the leadership of Mao Zedong, about 600 Chinese nationals were studying abroad. Between 1949 and 1977, there was a total of approximately 6,100. As of 1978, an increase of the Chinese student population abroad was observed. For the first time in 1978, the threshold of 10,000 was attained. This increase becomes more impressive as from 1993. Indeed, that year, the size of this population rose up to a six figure for the first time in the history of this immigration. Moreover, between 1993 and 2018, the number of Chinese students abroad has constantly increased. From precisely 106,800 in 1993, the Chinese student population abroad rose up to 2,731,300 in 2018 (Chinese Marketing Research, 2019).

The US colleges and universities have claimed the lion share of this population. For the sake of brevity, let's simply note that, according to the compilation by the International

Institute of Education (IIE), during the academic year 1949–1950, China did not figure among the list of 10 countries sending students to the US. Canada topped the list with 4,400 nationals and Iran closed the top ten list with 600. Nor did China appear on the same list in 1979–1980: the first sending-country was Iran with 51,000 students (representing 17.9% of the total population of foreign students) and Thailand ranked 10th with 7,000 students (equivalent to 2.3% of the size of the international student body). In 2014, a cohort of 770,665 Chinese students enrolled in foreign institutions (UNESCO Institute for Statistics). About 39.5% of these students (more precisely 304,040) were enrolled the same year registered in the US, making China the country sending the largest proportion of students both to the rest of the world and to the US. China's contribution to the international mobility kept rising with a total of 868,113 students, of whom 351,000 enrolled in US colleges and universities in 2016 (UNESCO Institute for Statistics; Zong & Batalova, 2018; IIE, 2017).

Deng Xiaoping's encouragement of the Chinese population to seek knowledge abroad was well heeded by his citizens: it led to the largest outflux of students experienced by a single country in some 150 years.

India's Discovery of Western Education

Historically, higher education in India shares some characteristics with that of China. Before contact with Western influences, two parallel systems of education existed: the Brahminic system, which was mostly religious, and the Buddhist system, which was more secular. In the 11th century, as the result of Islamic domination, a new system—the *madrasah*—was introduced, and remained influential within the Muslim population until British rule arrived.

Then, beginning in 1858, British rule in India opened the subcontinent to the Western education system. The first European-style university was founded in 1817 in Calcutta,

with the explicit mission of training a Westernized Indian literate class to serve in government positions, and to act as intermediaries between the colonists and the Raj. The British administrator Thomas Babington Macaulay, who played a major role in introducing Western concepts of education in India, declared that the purpose of the university should be “to make natives of this country good English scholars” (Choudhari, 2008: 58). Despite this opportunity in their own country, though, the educated Indian elite were more attracted to universities in England. Several factors contributed to this attraction.

- The quality of the nascent Indian education system was relatively modest, and often stopped short of the post-graduate level (Kanigel, 2016).
- British universities were considered the most prestigious at that time, with high international reputations.
- Certain professions were barred to applicants without “British qualifications.”

During the Raj rule, for almost seventy years (until 1922), any candidate for the Indian Civil Service had to take the exam in London. The same was true for Indian lawyers, who could only be “called to the Bar” there as well. This indirect form of discrimination—involving as it did a lengthy and expensive ocean voyage—excluded most potential Indian candidates from these professions. The only people who could take advantage of the opportunity were the small minority of the well-off, who could count on the financial support of their families. However, many students were able to benefit from the support of public institutions such as the India Office in London (Lambert-Hurley, 2016).

The first small wave of Indian students arrived in England in the 1840s. Nearly all were Christian converts coming to study theology, or Bengalis enrolling in medical schools.

Each following year brought more newcomers, until the second wave of Indian students arrived en masse in the 1870s. This cohort consisted of various ethnicities and religions, coming to study law or medicine, or to prepare for the civil-service exam. But despite their attraction to the universities of the British ruling class, in the early 20th century Indian students were increasingly becoming seduced by American universities, as these institutions built international reputations. During the 1901–1902 academic year, the first batch of Indian students arrived in America, most of them to enroll at the University of California (Jensen, 1988; Melendy, 1977; Helweg & Helweg, 1990).

By the time India achieved its independence in 1947, finally releasing itself from Britain’s political grip, its own number of universities had increased exponentially. From that single Calcutta university in 1817, the number rose to 28 by 1950, and to 369 by 2006. As well, the number of colleges in the country rose from 578 in 1950 to an estimated 18,064 in 2006. This was mainly the result of the Radhakrishnan Commission, established in 1948 with the goal of enabling the country “to attain, in as short a time as possible, freedom from want, disease, and ignorance, by the application and development of scientific and technical knowledge” (Choudhari, 2008: 60).

Despite the growing educational opportunities at home, Indian students continued to travel abroad to the UK, the US, and other countries. During the 2005–2006 academic year, 19,205 Indian students were enrolled in UK universities—making India the second-largest provider of students to England. The following year, in 2006–2007, that number increased to 23,835 (Somerville & Dhudwar (2010). In the US, about 103,000 Indian-born students were enrolled during the 2013–2014 academic year. This made India the second-largest source of international students for US institutions, after China (Zong & Batalova, 2015). All around the world, by the close of the 20th century, 59,112 Indians were studying outside their country; and by 2017, this number had reached

332,033 (UNESCO Institute for Statistics). Today, India is second only to China in terms of the number of students it sends abroad.

Colombia and its Educational Dependency to the West

Moving now from the Old World to the New, I turn to a very dissimilar historical trajectory. While the cultures of China and India suffered to some degree from European colonialism, they suffered far less than the Latin American countries. From the time of their “discovery” at the close of the 15th century, the native populations of this vast subcontinent were subjugated by the Spanish invaders—whose goal was first to strip the faraway lands of their wealth, and then to turn them into settlement colonies. Once the invaders had established themselves in the new lands, with their swelling population of European-descended immigrants, they built schools to cater to the educational, political, and economic needs of the (mostly Spanish) elite.

But the development of higher education in the colonies was unequal. Some had access to post-secondary schooling as early as the mid-16th century: for instance, the University of Saint Domingue was established in 1538; the National University of San Marcos, in Lima, was founded in 1551, as was the Royal and Pontifical University of Mexico; and San Thomas University, in Bogotá, was founded in 1580. Other colonies had to wait until the early 20th century: the University of Paraná, in Brazil, was only founded in 1912, and the University of São Paulo (also in Brazil) in 1920 (Charle & Verger, 2007). This inequality may possibly be the result of cultural factors: the Spanish conquistadors seemed more inclined to set up institutions of higher learning than did the Portuguese conquerors.

Most of these universities were conceived of as small-scale replicas of institutions already operating in the invaders’ homelands—such as the University of Salamanca, in the Castilian kingdom, founded in 1134. And nearly all were run by religious orders

such as the Catholics, the Jesuits, and the Dominicans. As a result, theology was the primary element of the curriculum. Canon law took precedence over all other disciplines, including history, philosophy, law, and even medicine (Roberts et al., 1996). As in many other places where religion ruled, research was discouraged in favour of obedience to God's word. But by the first half of the 20th century, scientific and technological innovations began sweeping the world; and education came to be seen as the core driver of socioeconomic development. Following in the footsteps of Western academic institutions, many Latin American institutions set out to develop their own research-oriented programs.

Like all Latin American countries, Colombia was formerly a European colony; and so the university system bears the strong imprint of that academic model. In the country's 112 universities, for most of their history the curricula were chiefly oriented toward the humanities, with little regard for the natural sciences. Not until after the Second World War were there even post-graduate programs (Jaramillo, 2005). Both these factors meant that ambitious Colombian students were highly motivated to study in academic institutions abroad. In the late 1940s and early 1950s, a handful of individuals took the initiative and enrolled in foreign universities—particularly in the United States. During the 1949–1950 academic year, for instance, enough young Colombians (600) were studying in American universities for Colombia to be listed as the ninth-largest provider of international students, representing 2.2% of the total population of foreign students on US campuses (Zong & Batalova, 2018).

The onset of the Cold War in 1947 heralded a number of changes at the international level, including global debates about the role of education in economic development. Both the United States and the former USSR wooed Colombian students, competing to win their political and ideological favour by offering scholarships. Starting in 1957, the

Fulbright Commission for Colombia funded the studies of Colombian students in some of the most select US universities; and by the early 2000s, the Commission had “provided 2,800 Colombians with full or partial scholarships for graduate studies in the US” (Jaramillo, 2005: 198). That initiative was matched by other institutions, motivated sometimes by ideological purpose, and sometimes by solidarity with Colombians.

Among those institutions was the Organization of American States (OAS), whose mandate was to strengthen the diplomatic, cultural, and economic ties between the nations of the American continents. The OAS promoted inter-state mobility for educational purposes; and through its support, several hundred Colombian students received scholarships to study abroad during the Cold War years. Following the lead of the OAS, in 2003 the European Union launched a relatively modest scholarship program designed to benefit the whole student population of Latin America. These scholarships were awarded to excellent graduate students who wished to study at a university in one of the European Union countries. In 2003–2004, this scholarship was offered to 251 students, of whom 37 were Colombian. The following year, 2004–2005, 113 young Colombians were among the 779 worldwide beneficiaries of this scholarship (Jaramillo, 2005).

In addition to these international and foreign organizations, the country’s own institutions have become increasingly helpful to Colombian students wishing to study in other lands. One such is the Colombian Institute for Educational Loans and Technical Studies Abroad. Since its founding in 1952, the institute has sent many successive cohorts of Colombian students abroad with scholarships to pursue their education: 534 in 2000 alone. Another public institution, with a high profile despite its limited financial resources, is the Colombian Institute for the Development of Science and Technology (popularly known as the Colciencias). It too supports students who intend to pursue

graduate-level studies abroad. In 1997 the program helped 42 master's students, and 151 doctoral students, to enroll in foreign universities.

Finally, paralleling the efforts of all the above, some private organizations also offer financial support for Colombian students. One such is the Foundation for the Future of Colombia, which between 1992 and 2002 enabled more than eight hundred doctorate and master's students to study abroad (Jaramillo, 2005: 190). These various initiatives have significantly boosted the enrollment of Colombian students in foreign universities in the last two decades, leading to a steady increase in their numbers. In 1998, 10,793 Colombians were studying outside of their own country. By 2005, this population had nearly doubled, to 20,294. And twelve years later, in 2017, the figure had doubled yet again, to 44,423 (UNESCO Institute for Statistics). For most, however, it seems that self-support is their primary resource: even the combined capacity of state and international funding institutions is very limited, when it comes to offering the large number of scholarships required.

How Germany Went from Attracting American Students to Feeding US Universities with its Own Nationals

So far we have examined Asia and Latin America. Europe, however, is a much smaller place, and so presents a very different pattern of student mobility. The unidirectional flux of Asian and Latin American students, who move in large cohorts to seek knowledge outside their own countries, does not characterize the European scholarly population. Indeed, most of (Western) Europe considered itself a destination for knowledge acquisition, rather than a place of departure. For most of the 18th and 19th centuries, the German academic system was viewed as a beacon of excellence, and a model for many non-European countries. While the United States was the prime destination for Asian and Latin American students and scholars in the 19th century, the

Americans themselves looked to Germany as the place to go for complete or partial training.

Drewek (2004) says that in the second half of the 19th century, about a hundred American students were enrolled in German universities. Their numbers kept increasing, reaching some 2,000 by the end of the 1880s (Thwing, 1928). According to J. J. W. Powell's tally, by the end of the 19th century approximately ten thousand American students had pursued their studies in a German university (quoted by Finger, 2011: 8). As this mobility increased, so did collaboration initiatives between German and American academics. Moreover, the German-trained students—returning to the United States with their new knowledge of the research-oriented German system—strove to recreate this model in the American universities when they became faculty members there. The development of German Institutes in major American institutions (such as the University of Chicago) contributed to this influence. Friedrich Paulsen was a historian at the University of Berlin, and the advisor or supervisor of several American students who went on to become major figures in American academia (one of them Nicholas Murray Butler, President of Columbia University, and the namesake of the university's main library). In 1903, Paulsen reflected on the German influence.

Nowhere does the German language, German science, and German intellectual life, presently find such free and grateful acknowledgment, such appreciation outside its own borders, than in [our] great nation.... [The German universities] can look with pride and thankful joy at the seeds they have sown here, which are now sprouting and beginning to ripen (Drewek, 2004: 29).

By the early 20th century, though, American students were no longer heading for Germany in such numbers as before. Fewer than three hundred only students were

studying at German universities—the lowest level since the 1880s (Drewek, 2004: 255). As Germany's presence on the world stage fell after the First World War, and sunk even deeper in the aftermath of the Second, the German university system—which had once embodied European academic excellence—dwindled in attractiveness. In America, though, the reverse was happening: the US university system was increasing in attractiveness. It now numbered a score of booming institutions, showered with inestimable resources by philanthropic and public institutions. The tide turned: fewer American students went to German universities, while more and more German students flocked to American universities—often with the support of the US government. According to Puckhaber (2002: 124), this “tentative step” in mobility was conceived of as a form of exchange program. Thus in the early post-war years, in 1946, a cohort of 50 German students visited the US at the initiative of the Military Government—the US authority stationed in West Germany. The American government quickly institutionalized this pioneering action in 1949 by creating the “German Program”—with the ideological purpose of sowing the seeds of democracy in German society.

Because of this ideological goal, the “exchange” program was mostly one-directional, from Germany to the US (Todd, 1996). The objective was supposedly to expose a select number of the future German elite (many of them the children of former Nazi leaders) to American democratic culture, with the aim of taking that new perspective back with them to Germany. Puckhaber (2002) quotes this comment by an unnamed US official in occupied Germany.

After the total bankruptcy of National Socialism, to which all [German] young people were exposed in their formative years, there remains very little to give their lives a new direction. The importation of new ideas and methods, through the exchange of books, magazines, educational films, etc.—while of great value to a re-education program—

cannot alone accomplish the task. It is imperative, therefore, that a large number of young Germans be brought face to face with the democratic way of life in the United States and other countries (125).

This strategy appears worthy of mention in three respects. First, it seems designed to purge at least a small proportion of Germany's young generation of the toxic racist ideology in which they were socialized. Second, the only similar US effort at re-education from the same period targeted students in Japan, another country known for its imperialistic ambition and belligerent actions against American interests. Third, the strategy is uncomfortably similar to the colonial approach to education used in Africa and Asia by both France and Britain: rounding up the children of the local chiefs and rulers, and sending them to a European school to be indoctrinated into the hegemonic mindset. (There is also an element of the caste-ridden society's instinct to prioritize the education of children from the ruling classes, at the expense of children from the lower classes.)

The results of the German Program were statistically remarkable. Between 1946 and 1952, about 3,000 German students (including some still in high school) were sent to study at US universities. In 1967 alone, their number was over 2000; in 1986, it was close to 6,000. During the 1993–1994 academic year, Germany sent 8,592 of its students to US institutions, ranking it at 11th place on the list of the top 12 sending countries (it was the only European country). In 1994–1995, the number rose slightly to 9,017, a 4.9% increase (Todd, 1996). Figures are lacking for the next two decades or so; but by 2015–2016, of 117,098 German nationals studying abroad, an estimated 10,146 were enrolled in US universities (UNESCO Institute for Statistics, no date; Insidehighered, no date; Marklein, 2016). Of the top 15 countries sending students to the US, Germany and Britain were the only European nations on the list.

The previous data demonstrate the high mobility of Germans, Chinese, Indians, and Colombians for educational purposes. Equally conspicuous is that these students have fallen under the spell of US academic institutions. One is encouraged to ask, as a result, if the same reasons (the pull factors) that attract these nationals to US universities can decide them to remain in the US upon graduation. The following section tackles this question.

The Unexpected Effects of an Action

In his 1977 book *The Unintended Consequences of Social Action* French sociologist Raymond Boudon observed that individuals may adopt rational behaviours whose results may lead to a situation that was not their intention. We might see this principle reflected in the countries discussed above, with a history of student mobility abroad. All the countries suffered from some degree of internal crisis, mostly of an economic-political nature. In search of a solution to the crisis, they decided to (or were directed to) send some of their brightest young people to foreign universities, often US institutions. These transnational movements had two major unexpected effects. The first was merely the continuing dynamic of habit, which kept fuelling student mobility even after the greatest need for it had passed. Even when the countries—China and Germany, for instance—had elevated their own universities to an internationally competitive standard, the younger generations still followed in the footsteps of their elders—believing, apparently, that a foreign certification was better proof of their worth than a domestic one. But this self-perpetuating pattern keeps local universities locked in a dependent relationship with foreign institutions. This is especially the case for Latin American universities, where such a pattern contributes to the perception of an US degree as a necessity for academic recognition.

The second, and more hazardous, effect is the loss—often a permanent one—of a country’s students to their country of education; in other words, brain drain. Several factors contribute to this. One is the not-unnatural desire of foreign students, having adapted to a new culture in order to acquire their training, to remain in it after completing their degree. Their socio-professional status in the foreign country might be better than back home, as might their salaries and working conditions. This is particularly true for academics, who might find in the other country infrastructures more conducive to academic excellence, and much more international visibility. Another major motivator might be the more stable and liberal political system in the new country, compared to the country of origin. All these reasons often lead the former international students to abandon the idea of returning to their home countries, and to become expatriates. And the US is arguably the country whose academic system captures the largest proportion of these foreign talents, primarily from the main countries I mentioned earlier: India, China, and Germany. In each case, various historical factors have contributed to the long-term presence of their scholars abroad.

Losing Ground: German Universities in the Aftermath of Nazism

Earlier, I spoke about the differing factors in Germany’s case—a topic I now return to here. It is difficult to disconnect the high number of German academics in the US, and the length of their stay there, from the political disgrace that fell on Germany as the result of the rise of Nazism in the early 1930s. As I mentioned earlier, hundreds of German scholars—most of them Jewish—had to flee the country; and many found refuge in America. By the end of the 1960s, US academia was home to many of these migrants. Their role in developing the nuclear bomb that ended the war is well known. However, they also contributed to the founding of some of their adopted country’s most prestigious academic institutions, including the Institute of Advanced Study in

Princeton, and the New School for Social Research in New York. As well, certain disciplines (such as philosophy and sociology) owe a great debt to these migrants, who introduced some epistemological revolutions like critical theory; not to mention the scientific knowledge brought by these expatriates—which, as I mentioned earlier, allowed the US to collect more Nobel Prizes than it had been able to before the war.

It may not be fair to attribute that particular brain drain exclusively to the Nazi regime. Soon after the war, realizing the benefit of German skills in developing its research infrastructure, the US began an operation to lure as many scientists as possible out of Germany, and into US military and industrial facilities. Project Paperclip, as it was dubbed, brought several dozen top scientists and technicians across the ocean. Its goal was to deprive rival countries such as the USSR of the know-how of German scientists. and ensure that the US was able to maintain a huge scientific and technological lead in the years to come (Gimbel, 1990).

Whether connected to these initiatives or not, the number of German scholars in the US kept growing: David Todd estimated that 4,369 were working in the US during the 1993–1994 academic year (1996:145), making Germany the European country with the largest number of nationals in US universities. An article by Isabelle de Pommereau points to the rise of this population, reporting that “1 out of 7 students who complete a PhD in Germany moves to the US, and 30 percent of them stay there” (2005). As a result, by 2005 some 20,000 German scholars were integrated into American academia. In 2003, a survey by the institution Sigma Xi (The Scientific Research Honor Society) estimated the total number of postdoctoral researchers in the US at 55,000. Of the representative sample of 22,000 survey, 4% was of German citizenship (Bernd, 2006:57) —meaning that Germany ranked 3rd on the list of nations sending postdoctoral researchers to the US. However, the exodus of German scientists and scholars was not

confined to America; Germany is also the country with the largest population of researchers in the Netherlands, Switzerland, and Belgium. Other foreign countries also benefitted, especially in Europe, often sustained through exchange programs between universities.

Indians in the US Techno-Scientific Landscape

The Indian brain drain appears comparatively more significant than the German one, both in terms of absolute numbers and of proportion. Between 2005 and 2015, more than 22,000 Indian scholars earned doctorate degrees from US institutions (NSF, 2017). In terms of science and engineering, the number of Indian citizens who remained in the US after graduating is second only to the number of Chinese scholars who made the same choice. The National Science Board survey mentioned earlier found that of the 6,300 Indian post-docs who graduated in 2005, 83% still lived in the US a decade later. On the other hand, of those surveyed who were awarded a Ph.D. in 2010, 85% remained in the US (NSB, 2018: 146).

The Lion Share Goes to China

The highest level of brain drain has undoubtedly been experienced by China. In a recent article about “reverse brain drain,” Youyou Zhou pointed out that until the beginning of the 21st century, most Chinese students graduating from foreign universities stayed away: “Only 1 in 10 returned to China after studying abroad.” The major factor was the opportunity for them to earn far more than their peers at home. According to the publication National Science Board, which surveyed a number of Chinese nationals who earned doctorates in the field of science and engineering from US universities between 2012 and 2015, the large majority reported plans to stay in the US. Half had already accepted offers from US companies or universities (NSB, 2018: 135).

Winning Back the National Talent

To cope with the loss of their expatriate knowledge, many nations have developed initiatives designed to lure back the missing expertise (Castells & Cardoso, 2005; Joao Rodrigues, 2002). Some countries have been attempting this “return migration,” or “brain gain,” for years, ever since the late 1970s (Meyer, 1997; Gaillard & Gaillard, 1997). In terms of both precedence and scope, China is arguably the best example for studying this post-diaspora trend. Of the three major countries I consider here, to my knowledge China was the first to implement an official return plan for expatriate students. Introduced by the Chinese Ministry of Education in 1977, and dubbed the Chunhui Plan, it specifically targeted students ranked at the top of their disciplines, with the goal of integrating them into the job market of their country of study.

The Chinese Diaspora Maze

In the same vein, in 1985 the Chinese government established the Science and Technology Activity Program for Overseas Students. Even more than the Chunhui Plan, this initiative aimed to attract graduates from foreign institutions. The emphasis on science and technology was obviously in keeping with the pervasive belief of the time, that technological innovation plays the major role in a country’s development. This notion followed the ideas of the US economist Walt Whitman Rostow, who in his 1960 book *Stages of Economic Growth: A Non-Communist Manifesto*, observed that industrialization is an important step toward development, and it entails the acquisition of a scientific and technological know-how (Rostow, 1961).

A few decades later, other initiatives appeared—all targeting the same demographic: skilled Chinese citizens living and working abroad. Perhaps the most famous of these is the Recruitment Program of Global Experts, better known as The Thousand Talents

Plan. Launched in 2008 by the Chinese government, the Plan reflects China's ambition to become a global hub of high-tech industry in the 21st century. This program is an extremely complex one, offering different tenure contracts for different types of expertise, and involving many institutions as well as the government and its branches. The overall recruitment initiative has six categories of programs, which I outline.

• **Long-Term Recruitment Program for Innovative Talents**

This program aims to attract, for a full-time permanent position, Chinese scholars specialized primarily in science and technologies. Recruits must be less than 55 years old. They must be holding a full professorship or equivalent thereof in a renowned foreign university or institute, or occupying a senior position in an international and reputable company. They are expected to assume leadership positions in the Chinese academic or non-academic institutions with which they will be affiliated. Their responsibility would include supervising the development and realization of projects mostly in the area of Research and Development, and serving as consultant on specific scientific and technological projects in China.

Despite its main focus on science and technology, this recruitment program includes however a provision for scholars in the disciplines of social sciences and humanities, who have acquired a high visibility in their own field of research and are affiliated with reputed research-oriented institutions abroad. Some key specialities within these disciplines are identified as particularly relevant as to the recruitment process. Among them Property Law, International Law, Psychology, and Environment and resources protection. The age criterion regarding candidates from these disciplines is slightly different than that for science and technology candidates. Potential recruits must be aged 60 years or less.

- **Short-Term Recruitment Program**

This is the sister version of the previous one. Instead of signing for a permanent contract, applicants are only required to commit to a contract valid for at least three years and work actually for a minimum of two months per year for a Chinese employer. This program also targets scientists who certify for the same age criterion, as well as a similar professional position and qualification as the one required for the long-term program. The expectations from candidates are almost the same as in the long-term program. They must, indeed, assume leadership role and contribute significantly in their own employment position to the industrial development of the country.

- **Recruitment Program for Entrepreneurs**

This seeks to bring back to China graduates from foreign universities who have been managing abroad, for at least a whole year, their own business, or have been appointed for more than three years at a middle or senior management level positions in an international firm. Particularly candidates who have been authors of technological patents as per international standards are highly sought out.

- **Recruitment Program for Young Professionals**

This targets PhD holders in sciences and technologies trained in renowned foreign universities and appointed at a teaching and/or research position in similarly prestigious universities or other types of institutions. Candidates must be under 40 years old and demonstrate an outstanding record of publication or proofs of becoming leading players in their own field. Appointees must commit to work full time in China.

- **Recruitment Program for Foreign Experts**

This aims to bring indiscriminately experts of any nationality to work in China for at least three consecutive years and a nine months per year. With regard to age limitation, this program appears as the least discriminatory, for candidates are allowed to participate until the celebration of their 65 years.

• **Recruitment Program for Top-Notch Talents and Teams**

This program expresses the Chinese *government's* ambition to compete with the most important nations in the domain of scientific and technological innovations by attracting recipients of some of the premier renowned awards such as the Nobel prize and the Field Medal.

The Thousand Talents Plan is a state initiative. However, it serves mostly as a framework of action for a score of institutions more or less related to the Chinese government. The analysis of the existing initiatives falling under the Thousand Talent Plans results in the identification of five major types of institutions: a) the direct branches of the national government, among which ministries and the Communist Party; b) the provincial governments; c) the municipal governments; d) the academic institutions (universities per se and academic organizations such as the Chinese Academy of Sciences); e) and firms, whether private or public.

While subscribing to the spirit and to the major purposes of the Thousand Talent Plan, each of these types of institutions frames unilaterally its own plan. There exist dozens of initiatives autonomously designed by provincial government, municipal governments, universities or firms. Besides, within the same institution cohabit sometimes a variety of plans.

The multiplicity of initiatives can partly be explained by the different needs of the various institutions. Chinese businesses, for instance, may be most interested in attracting engineers with a significant record of patents. The Chinese Academy of

Science, on the other hand, could be more interested in luring back the most-cited mathematicians. Although those differences in goals may justify some overlap, between and within the institutions, that fact may lead to undesirable competition, as well as to collaboration. Academic institutions may work with or against businesses to recruit expatriate Chinese talents, while the private and public sectors (including the national and provincial governments) might do the same.

India Reaches Out to Its Tech Savvy Diaspora

The efforts of the Indian government to establish ties with its diaspora mirrors the Chinese example, to some extent. However, there is a significant difference in the two nations' attitudes to expatriates. For most of its existence as an independent nation, free from British rule, India has always shown a marked indifference toward citizens who live outside its borders. This often caused deep frustration among Indian expatriates, as they tried in vain to reach out and engage the Indian authorities. The ideology that marked the Gandhi and Nehru generations equated patriotism with romantic love: just as a man cannot love two women, Indians living outside their homeland could be faithful only to the foreign country (Raghavan, 2012: 67). As a result, the Indian government has always been reluctant to recognize dual citizenship. Indeed, it has yet to come to terms with this possibility: the government still does not allow Indian-descended citizens of other countries to hold Indian citizenship, without first giving up the other.

Nevertheless, for decades now, India has been gearing up for substantial transformations. In 1987 the government began to revise nationality laws, with the goal of introducing the concept of *jus sanguinis*—literally, blood right; that is, citizenship based on ancestry. Previously, the nation had always subscribed to the *jus solis* (land

right)— that is, citizenship acquired by being born in the country. Voted in by a majority of legislators, the new law conferred citizenship on anyone who could certify that their parents were Indian citizens. So children born abroad to Indian parents were eligible for Indian citizenship; but they were still denied the right to hold dual citizenship – both Indian, and that of their adopted country.

In 1991 (more than ten years after China’s similar initiative), India embarked on an ambitious economic reform program—jettisoning more than four decades of economic dirigisme, and keeping itself separate from the rest of the world. A major element of this strategy was the attempt to connect the Indian diaspora—estimated to be about twenty million people worldwide—to its land of origin. The move seemed all the more relevant because India was then recognized as the country receiving the greatest amount of financial remittances sent back by its expatriates (Lum, 2012)—a figure that, in 2013, the World Bank estimated at \$70 billion (Maini & Ramaswamy, 2014).

For this purpose, the government launched various initiatives. One of its first steps, in line with the Nationality Act revision, was to officially recognize two other categories of citizenship. One was Non-Resident Indians (NRI); the other, Persons of Indian Origin (PIO), who had repeatedly demanded dual citizenship. In response, in 1999, the government introduced the PIO Card for Indian-descended people living abroad, and holding a foreign nationality. However, descendants not considered eligible included those who were citizens of Pakistan, Bangladesh, Bhutan, China, Nepal, Afghanistan, or Sri Lanka. These exclusions were mainly founded on either the longstanding political tensions between India and the other countries; or else on the desire to avoid getting embroiled in the internal affairs of countries that were rife with political secessionism and disputed sovereignty. As well, only four generations of Indian descendants were

allowed to apply (likely a superfluous restriction, since the proportion of the Indian diaspora aged over 70 was probably extremely small).

For those who did qualify as holders, the PIO card (for a cost of \$1,000) extended substantial rights. They were automatically eligible for a 20-year visa, and enjoyed almost all the educational, economic, and cultural benefits of Indian citizens—except for the right to vote. They could purchase property (though not agricultural land), and were entitled to public housing. In almost all respects, the expatriates were almost equal to nationals residing in India.

As the Indian government strengthened its commitment to more actively involve its expatriates in society, it set up a committee to report on the situation. The committee's task was to estimate the geographic extent of the diaspora, and to examine its main characteristics, with the goal of identifying how it could contribute to Indian society. The group's findings—including its recommendations on how to encourage the diaspora to get involved—were published in 2001 as the *Report of the High Level Committee on the Indian Diaspora* (RHLC).

The new perspectives provided by the report led the government to introduce new provisions designed to further engage the diaspora with its motherland. In 2004, it created the position of Minister of Overseas Indian Affairs (MOIA), an institution that would become the dedicated central office for India's diaspora policies. Its mandate was to serve as “a single-window contact mechanism for the NRIs/PIOs,” addressing their needs and ensuring “their engagement with India” (RHLC, 2001: xxxvii-xxxviii).

A second initiative for Indian-origin citizens abroad, introduced in 2006 by the MOIA, was the Overseas Citizenship of India (OCI) card, which differed slightly from the PIO card in terms of its benefits and requirements. It was available to all Indian people living abroad, except for those in Pakistan and Bangladesh; and it required beneficiaries to be

of the first, second, or third generation—making it less widely accessible. On the other hand, its benefits were more generous than the PIO card. It entitled Indian-origin foreigners to a free lifetime visa, and all rights but the ability to vote.

As well, other policies specifically target the actual scientific diaspora. Unlike the Chinese, India's policy is not homogenous. Rather, it consists of a series of initiatives involving many institutions and agencies, both at the federal and provincial levels; and also non-state bodies such as universities and businesses, often working in concert. I describe some of the most significant of these initiatives below.

- **MOIA Scholarships**

Introduced in 2006, this initiative benefits Indian-origin youth with NRI or PIO status. Every year it offers each category 50 scholarships to an undergraduate program at an Indian university or college. The goal is for beneficiaries to develop a sense of ethno-national belonging to India.

- **“Know India” and “Study India”**

Created in 2004, the purpose of these two schemes was to introduce diaspora youth to their Indian roots. Every year, Indian diplomatic and cultural representatives abroad would recruit a fleeting number of Indian-descent young people, 18–26 years old, to attend a three-week study program in India. Their accommodation costs were fully covered, as was a certain portion of their airfare. By 2012, 623 youth had participated in the two programs (Lum, 2012: 7)

- **University Admissions**

The government also revised the process for applying to its national universities, to benefit qualified NRI applicants. A new quota set aside a certain number of places for

them. There was precedence for this new policy. Around mid-century, India had conceived an affirmative-action program intended to correct a historical inequality in access to higher education. In India's extremely hierarchical society, such opportunities were almost entirely monopolized by members of the high Brahmin caste. The lower classes and castes—specifically the Dalits—had been excluded from schooling for more than a thousand years. So in 1950, the Indian government reserved roughly 22.5% of university places for lower-caste students, chiefly those of indigenous or Dalit extractions. And in 2008, the Supreme Court authorized the government to reserve up to 50% of places for those groups (Ramesh, 2008). The same process now worked in favour of NRI university applicants, who were also charged the same tuition fees as their Indian peers.

- **Overseas India Facilitation Centre**

A collaboration between the government and the Confederation of Indian Industry, the OIFC was founded in 2007 to facilitate the economic involvement of the educated Indian diaspora with India. As the years went by, specific initiatives were developed for scholars and academics. In 2016, for instance, the OIFC partnered with the world-renowned India School of Business (ISB) to launch a Fellows program called the New Initiative for Indian Diaspora Entrepreneurs and Professionals. Its goal, as stated, is to offer foreign-born businesspeople a residential learning stint at the ISB, to familiarize them with Indian markets and allow them to acquire the knowledge and decision-making capacity they need to engage with the Indian business sector.

- **Ramalingaswami Re-Entry Fellowship**

The initiator of this program was the biotechnology department of the Ministry of Science and Technology. The five-year research fellowship is open to Indian nationals

working overseas in various fields of biotechnology and life sciences, and who are interested in taking up scientific positions in India. The research areas include agriculture, health sciences, bio-agriculture, bio-engineering, and the environment. Its purpose is to help Indian universities and research centres to become more competitive at the global level. One mandatory criterion is age: candidates must be under 45. Like other recruitment programs, this one obviously also subscribes to the theory of declining performance with age.

- **Ramanujan Fellowship**

Similar to the previous program, this one was initiated in 2008 by the India Science and Engineering Board, under the auspices of the Ministry of Science and Technology. The extremely selective fellowship aims to attract top-notch Indian scientist and engineers from abroad, to work for five-year stints in the country's universities, scientific institutions, and for-profit research organizations. Candidates must be below the age 40.

- **Innovation in Science Pursuit for Inspired Research**

A sister program of the Ramanujan Fellowship, this faculty scheme (known as INSPIRE), is also an initiative of the Ministry of Science and Technology. It too focuses narrowly on science, and is aimed at young Indian citizens as well as NRIs. Applicants must be between 27 and 32, with a PhD in science, technology, engineering, or medicine from a world-class university. The program's goal is to strengthen the faculty of Indian universities with these promising young scholars.

- **Visiting Advanced Joint Research**

Initiated by the Ministry of Science and Technology in 2017, VAJRA invites NRIs, POIs, and OCIs to assume visiting or adjunct faculty positions in state-funded Indian

institutions and research centres. At this stage, VAJR is a four-year pilot program. Every year, the Ministry aims to attract 50 to 70 overseas scientists and academics to work as visiting professors for short periods, ranging from one to three months. The launch of the program drew 250 applicants from 13 highly ranked universities in 39 countries, of whom 43 were selected to participate.

Germany's Tardy Seduction of its Expatriates

Even though Germans have been lamenting the effects of their brain drain for decades, they have not yet put in place a national diaspora policy to match those implemented in China and India. Despite the damage to the international ranking of their scientific institutions, Germany's reality is more reactive than proactive. In sharp contrast to the structured, centralized, and government-sponsored policies of China and India, in Germany the federal state seems content to sit back and merely support the efforts of the institutions and agencies that are eager to reach out to expatriate scientists and scholars. This contrast seems strange, since Germany in fact shares many characteristics with one or both of the Asian countries.

- Like India, Germany is also a federation of states, each of which enjoys a degree of autonomy while accountable to the federal state, and dependent on it for various services.
- Like India and China, Germany refuses to recognize the concept of dual citizenship, demanding instead a single political allegiance of their citizens (Brubaker, 1998).
- Like India and China, the German system of higher education is overwhelmingly public funded.

- Like China again, Germany upholds the primacy of *jus sanguinis* over *jus solis*.

It confers automatic membership in the *Volk* on anybody who can certify their German ancestry.

Given these commonalities, Germany's timid seduction of its diaspora seems hard to fathom. Perhaps the country's academic system still enjoys a level of excellence and competitiveness that makes the return of its diaspora a less-than-urgent issue. Germany may still have a huge reservoir of qualified scholars and researchers, whose presence makes an ambitious diaspora program all but unnecessary. After all, compared with China, German academic institutions seem to have started feeling the necessity to woo its expatriate nationals only recently. Marko Kohler, a senior officer at the Bonn-based academic-exchange (DAAD), whom I interviewed for this study, said that it was not until the late 1990s that one of the government ministers pointed out "the risks that Germany might be facing, if it kept losing its scientists to other countries".

Other evidence seems to confirm this. Indeed, in 2004, at the annual meeting of the German Universities Association, then-president Peter Gaehtgens said that some 40,000 Europe-trained academics were currently working in the US, and "contributing to the unchallenged American dominance in science" (DW). Gaehtgens appealed for more funds for German universities, to give them more autonomy. But by that time, in 2004, China and India had already noticed the deleterious effects of expatriation, and implemented measures to reverse the dynamic.

Unlike China and India, however, where state-run industries are common, Germany's largest industries are mostly autonomous. Perhaps this is conducive to a case-based conception of diaspora policy, rather than a one-fits-all conception of diaspora policy. The same lack of an overall centralized vision may be evident in Germany's political constitution. The federal government has given up most of its prerogatives to the states

(Länder), including education. This is entirely managed by the states, each with its own ministry. Although there is a federal ministry of research and education, it plays almost no role in the management of education, even higher education. Should it try to meddle in this sector, says Karl Hans, another DAAD officer I interviewed, the federal court would intervene if requested to do so.

“Recently, the federal government tried to block the demand of some Länder to increase tuition fees. The matter went to the Supreme Court, which ruled in favour of the Länder. The judges said clearly that this is not a decision that the federal state can make. It is out of its jurisdiction”.

Considering all these factors, Germany’s attitude to its highly qualified expatriates makes more sense. With the federal government essentially unable to take leadership, scores of public and non-public institutions are taking on the responsibility of designing programs and strategies to lure back the scientific diaspora. Almost the only way the federal state can contribute is by offering financial resources to fund scientific research, which German laws allow; and the various initiatives usually rely heavily on these. In the next section, I describe some of the major organizations engaged in this effort.

• **Helmholtz Association of German Research Centres**

Known as the Helmholtz, this non-university institution (comparable to the Max Planck Institute and the Leibniz Association) is currently Germany’s largest autonomous research institute. Funded by the national government, with an annual budget of \$2 billion, it employs over 24,000 people in fifteen research centres throughout Germany, some partnered with German universities. Strictly science-focused, the cutting-edge research conducted there is primarily in the fields of health, environment, energy, transport, and space. The Helmholtz has launched its own scheme to recruit

promising young German scholars from abroad, as well as brilliant scientists of German nationality.

- **Max Planck Institute**

One of Germany's premier research centres, the institute's ambition is similar to the Helmholtz. Originally entirely science-focused, the Max Planck has expanded to research in the social sciences and humanities. However, it is more invested in its competitiveness in scientific research. In 2001, the institute created a scheme meant to interest some of the most productive and innovative German scientists working there.

In addition to the initiatives launched by these research-oriented institutions, several universities have created the position of junior professor—a relatively novel status in the German academic landscape. Compared to the North American academic system, and even the French, young researchers in the German system are often in a precarious situation. Almost all privileges (such as full-time permanent positions, and access to funding) go to professors who are middle-aged or older. These professors owe their status to their completion of a habilitation thesis—a sort of second PhD, which has no equivalent in North America. Younger scholars essentially had only two options: working as assistants to professors, who would define their career trajectory; or leaving academia. Nothing but the retirement or death of one of these mandarins would make it possible for an assistant to rise to their desired status.

Such a rigid system, markedly unfavorable to younger scholars, is a major factor driving away scores of young German academics to more hospitable academic climates. The introduction of the junior professorship was meant to alleviate the situation, and possibly to halt the German brain drain. However, it is too soon to draw any

conclusions—as one of my informants, Marko Kuhn, pointed out in our interview. He has this to say about the new limited contracts offered to junior professors.

“Many academics who were appointed as junior professors, after their contract expired, were without a position. They had to go back and become the assistant of a full professor again, because there simply wasn’t any professor position available in their university. So this junior professorship is a mid-term solution, but not yet a real solution. This is why German universities are advocating for tenure-track position, like you have in Canada and elsewhere”.

In fact, a few German universities are already experimenting with the tenure-track model, and it is expected to be universal by around 2032. The federal government has already earmarked a budget of about a billion euros to create roughly a thousand tenure-track positions throughout the (Germany’s Ministry of Education and Research). As well, in 2005 the federal agency called the German Research Fund (in German, *Deutsche Forschungsgemeinschaft*, or DFG), collaborated with the federal education ministry and the Länder on an ambitious six-year pilot project called Excellence Initiative. Between them, the partners invested €1.9 billion (75% from the federal government, 25% from the Länder) to promote cutting-edge research programs in German research institutions, in order to enhance their competitiveness (Sinha, 2007). In 2009, the initiative was renewed until 2017, and its budget increased to €2.7 billion. The program has been so successful that in 2017 it was renewed again, with the name changed to Excellence Strategy. This initiative is a relatively simple one. The universities in the Länder submit applications for budget resources to the DFG, to be used for various purposes: recruiting exceptional scientists (whether German expatriates or not); operating existing research programs, or creating new ones; and funding promising candidates, at the doctoral and postdoctoral levels.

Though Germany's diaspora policy lacks the level of structure and centralization of those implemented in China and India, it is still more advanced than those of other countries—such as Colombia, for instance, which early in the 1990s announced its goal of linking its scientific diaspora with its own community of research and teaching activities (Meyer, Charum & al., 1997). This led to the creation of the Caldas, a network of scientists in the diaspora. But for the past twenty years, this institution has seemed to be dormant.

Multiple Strategies, Similar Patterns

Of the countries I describe here, most are eager to solidify their local research institutions by recruiting from among their expatriates. Some of their communication strategies are almost universal, while a few are specific to the nation that devised them. One of the most widespread tools is the “brain fair”—an open forum where qualified academics can learn who is in the market for their training and knowledge; and organizations can advertise job offers and attempt to attract scholars. China, for instance, under its Thousand Talents Plan, has organized many such multiple fairs to allow institutions, universities, companies, and government agencies to bid on the available expertise—sometimes even competing against one another. Beijing, in particular, regularly holds its own event (known as Beijing Tour for Overseas Talents) to persuade skilled expatriates to come back to Beijing. Potential candidates are bombarded with marketing rhetoric: Beijing is, they are reminded, the country's centre not only for technology, but also for international communications, culture, and politics. The tour organizers like to highlight their record at attracting returnees: 1,058 of them since the birth of the program.

Beijing is so eager to lure qualified expatriates back to the country, it even covers the expenses of selected participants, allowing them to attend for free. For others, their accommodation and entertainment are covered, as is part of their airfare.

A similar recruitment initiative is the Silk Road Forum for Distinguished Young Scholars, organized by Northwest University in the city of Xi'an, in the Shaanxi province. This event is aimed specifically at PhDs in the natural sciences, and in engineering technologies, with the goal of attracting the demographic it most covets: "distinguished young scholars for their career start-up and innovation in Shaanxi." Another example of such fairs is the Hangzhou Young Scholars Forum of Zhejiang University Technology, which has one of the most generous reimbursement plans for participants. And many other provinces and cities hold their own versions of these events.

India too has been working to target its diaspora, in its own way. In 2001, Prime Minister Atal Bihari Vajpayee went on a diplomatic tour to the US, Britain, and Russia, with the goal of meeting some of the NRI communities there, and pointing out to them the advantages of engaging more closely with India. In London, Vajpayee appointed an ambassador-at-large to reach out to British NRIs (Suri, 2001: 10). In 2003, his government also established the annual Pravasi Bharatiya Divas, or Non-Resident Indian Day. This event features a huge rally (often presided over by the prime minister) that brings together prominent members of the diaspora community, and scores of politicians, to highlight the contribution of expatriates to many facets of Indian development.

In the same vein, the current prime minister, Narendra Modi, made two visits to the United States during the first year of his term. In 2014, he addressed a crowd of several thousand expatriate Indians at New York's Madison Square Gardens, telling them of his

plan to channel their expertise toward India. And in 2015, Modi visited the West Coast. His first stop was Silicon Valley, where many expatriates are working on cutting-edge technologies. (According to a recent study, about 20% of Silicon Valley startups are headed by Indian-origin innovators (Desai, 2015; see also Saxenian, 2002). During the same tour, Modi also addressed a crowd of 18,500 in San Diego, with the same message for his community.

Other initiatives India has devised to connect with its diaspora include public ones, by major state institutions; and private ones, by autonomous institutions such as universities. At the state level, one of the most noteworthy is the Global Indian Network of Knowledge (GINK), set up in 2010 by the Ministry of Overseas Indian Affairs. Similar to Colombia's Caldas, the goal of this virtual platform is to connect professional expatriates with specific specialties, to the various Indian organizations looking for that type of expertise (Hercog & Siegel, 2011). This platform works without necessarily relocating the experts: they can share their knowledge from afar, and collaborate at a distance.

Some Indian universities—particularly the cluster that forms the renowned Indian Institute of Technology (IIT)—have their own initiatives. One such is the building of an alumni network, which includes a large proportion of former graduates working or studying abroad. This network can be used to advertise open faculty positions, opportunities for visiting professorships, and upcoming research projects. In an interview, Devan Khakhar, director of the IIT Bombay, acknowledged that the network “facilitates recruiting faculty” (Mishra, 2013).

A similar initiative, developed by IIT Gandhinagar, is the regular international meeting named Higher Education Overseas Indian Conclave. During the last event, held on the institute's campus in early 2019, local scientific faculty mingled with expatriates, most

of whom were former graduates working in the US as academics or entrepreneurs. They discussed the role that NRIs should play in revitalizing Indian higher education, particularly Gandhinagar. The institution's director, Sudhir Jain, pointed out that the many professional NRIs and PIOs are "an incredibly valuable resource that Indian educational institutions can tap for their academic and institutional advancement" (Mozumder, 2019).

As I mentioned earlier, the situation is slightly different in Germany, where private organizations (sometimes publicly funded) almost monopolize the field of connecting with expatriates. Perhaps the most active bodies in this field, whose efforts often overlap, are the German Academic International Network (GAIN), and the German Scholars Organization (GSO).

GAIN was founded in 2003 as a joint initiative of the Alexander von Humboldt Foundation, the DFG, and the DAAD; most of the scholars and scientists who make up its membership are located in North America. Its main purpose is liaison: linking expatriate researchers with German-based organizations and universities with positions to be filled, or funding opportunities. Every year since 2001, GAIN has organized an annual conference in the United States (alternating between San Francisco on the west coast, and Boston on the east coast). The event brings together representatives of up to a hundred German institutions, universities, research organizations, funding agencies, etc., and several hundred researchers from different fields. The registration fees from the conference help to fund the organization's activities.

Along with the annual meetings, and in partnership with GSO, GAIN sets up regular monthly networking events throughout North America. Known as *Stammtisch* (a German word meaning, literally, a regular table, or a usual hangout), these informal venues (often located in cafés and bars) allow German scholars and scientists to keep up

with the German research community, meet colleagues, access private information channels, and exchange experiences and ideas with fellow countrymen. There are *Stammitsche* in more than forty American and Canadian university towns, plus a few others in cities in Europe and Asia.

The not-for-profit GSO, located in Berlin, was founded in 2003 by a mix of scientists – among whom, Eicke Weber then a stellar professor of physics at the University of California, Berkeley –, businesspeople, and research organizations. It has half a dozen permanent employees, and an average annual budget of €1.6 million provided by wealthy sponsors. Like GAIN, part of its mission is to bring together scientists and scholars, and the institutions and firms that need their services. Another aspect of GSO's work is to organize workshops for small groups of scholars and researchers, where they can liaise with experts, get career advice, and learn from role models.

Incentives

In their efforts to reverse the brain drain—to bring back expatriate citizens, and to retain the local research talent who might be tempted to migrate—countries have devised a number of incentives. The most efficient of these are always likely to be professional and financial benefits (though cultural and symbolic incentives may also be used). In the former case, institutions compete with one other to match the competitive salaries, generous research funding, and comfortable working conditions offered by prestigious Western universities. In its Excellent Young Talent program, for instance, Zhengzhou University offers a salary of roughly \$85,000 (600,000 yuan) to STEM candidates at the level of professor, and start-up research funds of roughly \$1,450,000 to \$2,800,000 (10 to 20 million yuan).

And in its own Young Talent program, South China University of Technology's School of Physics and Optoelectronics promises its new scientists and professors salaries ranging from \$800,000 to \$1,667,000 (5.5 to 7.5 million yuan), which is very generous compared to the local cost of living.

Although not all returnees have access to such benefits, the people I interviewed say they find their salaries and working conditions comparable to those at American universities. Wu Zhang, a professor of social sciences, points out that in his former institution, in the Western USA, his salary was about \$70,000, and only \$5,000 in research funding was available. If they needed more, faculty members had to apply for external grants. But in his current Chinese university, he says, his salary is higher than what he earned in the US; and internal research funds are freely available. "I don't need to compete too much to get them," Dr. Zhang says. "There is almost enough money for all applicants."

Both in China and in India, states and institutions complement the salary of their recruits with material benefits, one of which subsidized housing. In China, similarly, returnees are guaranteed a house, or at least an apartment. In India, the Ramanujan fellowship provides a "house rent allowance."

In Germany, though, scientific returnees appointed at universities do not expect to receive equivalent salaries and benefits. The main reason is that in Germany universities are considered public organizations; and the rules governing salaries in that sector are much less flexible. So instead of offering high salaries to attract staff, universities mostly focus on research funding. Karl Hans, one of my interviewees, explained how the system works.

We cannot pay high salaries like American universities, so what many universities do is give recruits a lot of money to build a laboratory, and hire PhDs and postdocs. They say:

“For each PhD you train, you’ll receive €10,000 or so a year.” Researchers take those positions because they’re happy to have several PhDs working with them. If salary was our only means, universities would not be able to recruit expatriates from North America.

India is in much the same situation, though still committed to improving working conditions for academics. In 2018, the government doubled its budget allocated for scientific research (Mishra, 2013).

Other incentives are more symbolic, though they may be convertible to financial (or at least social) capital. German universities often use the strategy of fast-track promotion: new assistant professors hired from abroad are automatically promoted to full professor, with tenure. This allows the recruiting universities to raise their salary to a higher level, and also to grant more academic prestige. During India’s annual Pravasi Bharatiya Divas—the celebration of its diaspora—the government gives out awards to its most celebrated scientists. And in China, sought-after scientists recruited from abroad are awarded the coveted title of National Distinguished Expert.

China even revised one of its core laws to attract expatriates to return. From 1979 to 2015, in order to slow down the country’s runaway population growth, the Chinese government had imposed a one-child policy on its people. However, the expatriate scientists and scholars wooed by its universities and research institutions were exempt from this restrictive policy. In 2002 the National Health and Family Planning Commission issued its Bill 32, which effectively gave returnees permission to have two children if they wished.

“In order to adapt to the new situation of opening China up to the outside world ... students who have lived abroad for more than one year are not bound by the requirements of the state’s family planning laws and regulations. If they give birth to a

second child in mainland China, after having their first child abroad, they will not be punished” says the Bill 32.

That decision was accompanied by linguistic provisions for the children of expatriates. In 2000, the Ministry of Education legitimized the creation of a dual stream within the educational system.

“When children of outstanding returnees have difficulty using the Chinese language, local schools may, at their discretion, conduct bilingual teaching.... When the situation permits, such children may be designated to attend one or more schools with better conditions.”

Such exemptions, by catering specifically to the offspring of returnees, constitute a de facto acknowledgement by the Chinese government that its citizens have unequal status—that expatriates and their children merit “better conditions” than ordinary Chinese.

No such flagrant hierarchy of official worth is visible in India’s policies for expatriates. There is a government scheme titled Scholarship Program for Diaspora Children, launched in 2006, designed to promote Indian universities (particularly prestigious institutions such as the IIT) as a study destination for the children of PIOs and NRIs. But the program does not discriminate against students living in India. Rather, its goal is to repair the discrimination that the offspring of NRIs have suffered in the past, from not having access to affordable education in the land of their ancestors.

Conclusion

The diaspora policies I have reviewed in this report confirm the primacy of globalization as a characteristic of the modern era, manifesting itself in the dispersion of

millions of people away from their home countries. Proof of this is the presence of some 20 million people of Indian descent outside of India; over 55 million people of Chinese origin outside of China; and few million Germans outside of Germany. But despite this reality, we should not be tempted to think that state sovereignty is obsolescent. The fact that states, as well as their research institution, are scrambling for the know-how of their expatriate citizens might force us to question Louis Pasteur's famous assertion that "science knows no country" (quoted by Lerch, 1999).

It is true that the search for scientific and technical knowledge may take place in a stateless professional climate, unfettered by nationalities. Indian and Russian geologists, Colombian and Sri Lankan mathematicians, German and Icelandic climatologists, Chinese and British agricultural experts—all these scientists from around the world work together in a collegial atmosphere (ideally), bound closer together by the solidarity of their work than divided by their countries of origin. Still, the practical and financial results of such production may well benefit a specific national community before the international one (as pointed out in 1988 by Bruno Latour). Knowledge generates employment and income, which tend to fix their beneficiaries in the location where they are available. And since these beneficiaries, as taxpayers, contribute to the economic prosperity of their nation—it is no wonder that states try to jealously retain their own researchers, and use all kinds of strategies to attract back those who have left in search of greener pastures.

The fact that countries all over the world have initiated diaspora policies is proof that, despite the spread of globalism, national sovereignty still matters. The scientific field is now the new arena of competition between nations. In modern times, that ages-old battle is being played out in the scientific arena, partly because—as Bourdieu's theory of fields suggests—so many relatively autonomous fields (including the military and the

economic) depend significantly on scientific innovation (Bourdieu & Wacquant, 1992). The current tension between the US and China is an example of this. America is cracking down on Chinese scientists based in the US, accusing them of stealing its data and innovations.

As states multiply initiatives to attract back their talented expatriates, what kind of return on their investment are they likely to get? This is an ongoing subject of discussion among academics. Competing figures are provided, but their significant differences—plus the lack of any general agreement about how to crunch the numbers objectively—discourage attempts to draw any definitive conclusion about the results of these policies. What data and facts are available, though, suggest unequal results from one country to another. They also indicate similar inequalities even within the same country, depending on the categories of returnees being considered. It can at least be said that in terms of money being sent back to the homeland, India seems to be the country benefiting the most from its outlay of funding. In 2013, the World Bank calculated those remittances to be \$70 billion (Mohan & Chauhan, 2015). And the government's own High-Level Committee on the Indian diaspora estimated the contribution of expatriates as 3.78% of the total Foreign Direct Investment flowing into the Indian economy.

However, the success or failure of India's diaspora policies is still open to question. On the one hand, many facts and figures indicate that a reverse brain drain may be taking place. Between 2000 and 2004, for instance, according to a one report, an estimated 25,000 IT professionals working in the US returned home to India (Nasscom-McKinsey, 2005). During 2010, some 60,000 professionals and academics working in the US did the same thing (Sridhar, 2017). And over the past 20 years, the news media have been saturated with stories of Indian innovators who built start-up companies in

the US, then sold them and launched a new IT business in India. Such success stories include Vinod Dham, the man behind the invention of Pentium; K. B. Chandrasekhar, the creator of web-hosting company Exodus Communications; Gururaj Deshpande, the creator of Sycamore Network; and Sabeer Bhatia, the founder of Hotmail—and these are only the tip of the iceberg (Singh, 2003). Finally, there was the 2011 study by Rutgers University, Penn State, and India’s Tata Institute of Social Science, which surveyed 998 Indian graduate students in the US out of 100,000. The survey found out that only 8% of them “strongly preferred to remain in the US,” while the other 92% either planned to return to India, or were undecided (*Rutgers Today*, 2011).

However, despite these scholars’ professed desire to return to India, some opposite evidence points to the fact that these might be outliers, as Malcolm Gladwell (2011) would say, rather than the norm. A recent analysis shows that for every 28,000 patents filed by an Indian living in the US, only one is filed by an Indian living in India (Tumbe, 2018). And another recent survey found that between 2012 and 2015, 87% of Indian PhDs in science and engineering, living in the US, “reported plans to stay in the United States” (NSB, 2018: 135).

Compared to India, China boasts a much stronger return rate. In 2015, for instance, 2.2 million students returned home after completing their education abroad. As the result of recent changes to government policies, China has experienced a two-pronged evolution. On the one hand, the number of the country’s young people choosing to study abroad has increased; on the other hand, the proportion of these scholars coming back has also increased. By 2012, the various diaspora schemes had enabled the return of 2,263 scientists and scholars, to take up positions in Chinese research institutions (Xie, Zhang, & Lai, 2014). Among these returnees were many stellar researchers who gave up coveted research chairs in the US. Three decades ago, scientific research in China was

barely noticeable. Today, the country is the second-largest producer of scientific papers, behind only America. This increase is due to several factors, including a “labour market favoring academic meritocracy, [and] a large diaspora of Chinese-origin scientists” (Xie, Zhang, & Lai, 2014).

To be sure, the increasing rate of Chinese returnees is commendable. However, we can only speculate how much greater it might be if the Chinese government gave more guarantees to those of its diaspora who remain unconvinced of the country’s attractiveness. I interviewed two Chinese academics living in the US, who were put off by the nation’s authoritarian regime. One gave her view that even in the 21st century, the sociocultural climate in Chinese universities still tends to patronize female scholars, regardless of their ability, while male professors dominate. This needs to change if women expatriates are to engage with Chinese academia.

It is also difficult to interpret the results of German diaspora policies. While some data seems to conclude that they have succeeded, other information points the other way. One study of GAIN by Georg Rudinger completely likely in 2012 (no date), surveyed 811 researchers – out of 1,665 researchers participating in the GAIN annual meetings. He found that 48% of the researchers surveyed were returnees, 42% lived in the US or Canada, and 8% lived elsewhere. Rudinger also found that between 2004 and 2008, about 66% of the GAIN participants made the decision to return to Germany—16% of them without having yet received a job offer there. Those numbers are extremely encouraging, and suggest that in a relatively short time, Germany has already reversed the course of brain drain.

Again, however, from a different perspective, the success seems less impressive. The country is still struggling to lure back many of its stellar scientists working abroad. In our interview Claudia Simmel, a GSO employee, confessed that despite the millions of

dollars invested to attract the most top-notch scholars, the result has been extremely modest. Since the GSO has started operating, she said, “barely 80 researchers of that calibre have accepted an appointment in Germany”.

The diaspora policies of these countries are susceptible to become a source of brain drain at the expense of less-advanced countries. Germany, India, and China are not just aiming to attract their own citizens living abroad, or their foreign-born offspring. Their strategies also target desirable scientists from other countries. During my interviews with Marko Kohler and Karen Kuntz, I asked them whether scholarships given to non-German nationals are conditional on the award-winner returning home after their stint. Both responded that Germany, and the foundations concerned, respect the individual’s freedom of circulation, and the right to live and work where they choose. So if a German institution decides to recruit a talented candidate, the state would not oppose them living in the country. With such an approach in effect, brain drain seems poised to equal brain gain—meaning that in the new scientific order, the issue is likely to remain a contentious one.

Recommendations

What lessons might we learn, in our modern knowledge-driven economy, from the success or shortcomings of the diaspora policies implemented by China, India, and Germany? The African continent today still struggles with socio-economic precarity, and limited financial resources. Consequently, it is difficult for African states to support a quality post-secondary system. But African countries could emulate China and Germany in creating state-funded research institutions, designed to work along with their existing universities.

These need not simply imitate the institutions I discuss in this document; rather, their mission and focus should reflect Africa's own most urgent development needs. In the past, African states have funded students to study abroad for professions that were, at that time, largely irrelevant to their countries. Many of these students ended up staying in their countries of training, benefitting them with their expertise rather than their home countries; and those who did return often found that their professional knowledge was useless. This situation might be termed both a brain drain, and a brain waste. To avoid that kind of situation, it is vital that when countries create centres of excellence, they focus on practical needs that mesh with actual national requirements.

Given the huge financial investment of such a move, nations need to find strategies to lower the up-front expenses. An approach that has proved viable in the past is for countries to pool their resources to create several institutions, in different disciplines, each located in a different country – I call it a federal approach. These institutions would be managed and staffed with input from all the funding states. This was the approach adopted by Francophone African countries between the 1970s and the late 1990s: they developed post-secondary institutions based on this principle. Not only did the participating states lessen the financial burden on each, they also brought students from several countries closer together. However, one problem with strategy is that it requires a certain degree of continuity and political stability, as well as freedom from foreign intrusion. In many of these countries, those conditions were not available, which jeopardized the development of such institutions.

Currently, when African universities create their own academic organizations, they are almost always funded by the World Bank. However, the Bank pledges only short-term support, meant to end in few years; and this could imperil local universities, since they are unable to charge high-enough tuition fees to fund themselves. What is needed are

strategies that could take over the World Bank's funding role, and allow these academic organizations to be primarily funded by their pooled resources.

In terms of engaging the academic diaspora with their birth country's academic institutions, it is necessary to invent infrastructures and incentives that would ensure the permanent allegiance of the expatriates. Important though financial incentives are, they are not always a prerequisite for such identification. Sometimes symbolic gestures suffice. In line with this idea, African countries might consider any or all of these initiatives:

- Implementing a Federal Academy of Arts and Science – many African countries have created their own national academy of Arts and Science. This federal organization will integrate the most reputed researchers from the same continent. It would assume several responsibilities. The first responsibility is to serve as an observatory of the academic production within the continent. The second is to serve as an instrument for identifying and connecting the members of the academic diaspora. In collaboration with vice-chancellors and ministries of higher education, the Federal Academy of Arts and Science would also contribute to designing the orientation and goals of academic research in Africa. Another of its responsibilities would be the selection of visiting scholars for the centres of excellence and the planning of these scholars' visits.
- Creating a "National Day" to celebrate the outstanding accomplishments of members of the African academic diaspora. This event, which could be held on the same day as Africa Liberation Day, would also highlight the achievements of deserving African academics working in Africa. Honoring these local researchers alongside deserving diaspora scholars is a sound decision. It would curtail any assumption that in order for an African researcher to be recognized and valued by his fellow Africans, she/he must live and work abroad.

- Establishing an ambitious postdoctoral scheme funded collectively by all states members of the African Union. Academics in Africa devote most of their time to teaching and administrative duties, which affects heavily their research performance. Besides, very few African universities offer funded research leave to their faculty. This teaching-intensive environment often leads to a huge waste of talents who gave up research. In order to reduce such waste or the exodus of academics toward other activities, states could conjointly or separately develop long-term postdoctoral research fellowships. These fellowships could be open to PhD holders in the diaspora as well as the full-time professors based in Africa.

Bibliography

Adams, Walter, “The Problem: Introduction”, in Adams, Walter (ed.) *The Brain Drain*, London, Macmillan, 1968.

Amey, Peter, *From the scientific revolution*, Saint-Paul (MN), Greenhaven Press, 1980.

Balmer, Brian, Gregory, Jane & Godwin Matthew, ‘*Brain Drain*’ *Debate in the United Kingdom, c.1950-1970*, UK Data Archives, Study n°6099, 2009.

Baringer, Herbert, Gardener Robert & Levine, Michael, *Asian and Pacific Islanders in the United States*, NY, Russel Sage Foundation, 1995.

Bernd, Wächter, “Brain Drain: What we Know and What We Do not Know”, in Teichler, Ulrich (ed.), *The Formative Years of Scholars*, Wenner-Gren International Series, London, Portland Press Ltd., 2006.

Boudon, Raymond, *The Unintended Consequences of Social Action*, London, Palgrave Macmillan, 1977.

Bourdieu, Pierre & Wacquant, Loïc, *An Invitation to Reflexive Sociology*, Chicago, University of Chicago Press, 1992).

Brubaker, Roger, *Citizenship and nationhood in France and Germany*, Harvard University Press, 1998.

Castells, Manuel & Cardoso, Gustavo (eds.), *The Network Society; From Knowledge to Policy*, Johns Hopkins University Center for Transatlantic Relations, 2005.

Charle, Christophe & Verger, Jacques, *Histoire des universités*, Paris, PUF, 2007.

Chinese Marketing Research, 2019.

Choudhari, Sujit K., “Higher Education in India: A Socio-Historical Journey from Ancient Period to 2006-07”, *Journal of Educational Enquiry*, 8(1), 2008.

Crowther, James G., *Science in Modern Society*, London, Cresset, 1967.

De Pommereau, Isabelle, “To Halt Brain Drain, Germany Adopt ‘Competition’ Mantra”, 1 February 2005, *The Christian Science Monitor* (Available through www.csmonitor.com).

Desai, Ronak, “Why Prime Minister Modi is Visiting Silicon Valley”, *Forbes*, 25 September 2015 (Available through forbes.com).

Drewek, Peter, “The Inertia of Early German-American Comparisons: American Schooling in the German Educational Discourse, 1860-1930”, in Charle, Christophe, Shriewer Jurgen & Wagner, Peter (eds.), *Transnational Intellectual Networks: Forms of Academic Knowledge and the Search for Cultural Identities*, Frankfurt/NY, Verlag, 2004.

DW, “German Universities Fear Brain Drain” 04 May, 2004 (Available through in www.p.dw.com)

Easia Columbia University, China’s Golden Age: The Song, the Mongols and the Ming Voyages (Available through www.afe.easia.columbia.edu).

Finger, Claudia, *The Social Selectivity of International Mobility among German University Students: A Multi-Level Analysis of the Impact of the Bologna Process*,

Discussion Paper SP I 2011-503, Wissenschaftszentrum Berlin für Sozialforschung, December 2011.

Gaillard, Jacques & Gaillard, Anne-Marie, “Introduction: The International Mobility of Brains: Exodus or Circulation?”, *Science, Technology and Society*, 2(2), 1997

Gimbel, John, “Project Paperclip: German Scientists, American Policy, and the Cold War”, *Diplomatic History*, 14(3), 1990.

Gladwell, Malcom, *Outliers: The Story of Success*, Boston, Little, Brown & Cie, 2011.

Gueye, Abdoulaye, “L’engagement des universitaires africains expatriés dans l’enseignement supérieur en Afrique”, *Revue d’anthropologie des connaissances*, 12(4), 2018.

Huang, Wei-Chiao, “An Empirical Analysis of Foreign Student Brain Drain to the United States”, *Economics of Education review*, 7(2), 1988.

Helweg, Arthur & Helweg, Husha, *An immigrant Success Story*, Philadelphia, University of Pennsylvania Press, 1990.

Hercog, Metka & Siegel, Melissa, *Engaging the Diaspora in India*, United Nations University-Maastrich Economic and Social Research Institute on Innovation and Technology, Working Paper Series, 2011.

Hindustan Times, “PM Modi Asks Diaspora to Invest in India, Works Towards Development”, 8 January, 2017 (Available through www.hindustantimes.com).

Hiroshi, Abe, “Borrowing from Japan: China’s First Modern Educational System”, in Hayhoe, Ruth & Bastid, Marianne. (eds.), *China’s Education and the Industrialized World: Studies in Cultural Transfer*, Armonk (NY)/Toronto, M.E. Sharpe/Toronto OISE Press, 1987.

Ichiko, Chuzo, "Political and Institutional Reform during 1901-1911", in Fairbank John K. (ed.), *The Cambridge History of China, Late Qing 1800-1911, vol. 10*, Cambridge University Press, 1978.

Insidehighered.org, "International Student Number Top 1 Million", 14 November 2016 (Available through www.insidehighered.org)

IIE (International Institute of Education), *Open Door: Report on International Education Exchanges*, Washington D.C. IIE, 2017.

Jaramillo, Isabel Christina, "Internationalization of Higher Education in Colombia", in De Witt, Hans, Jaramillo, Isabel Christina, Gacel-Avila, Jocelyn & Knight Jane(eds.), *Higher Education in Latin America*, Washington DC, World Bank, 2005.

Jensen, Joan, *Passage from India*, Yale UP, 1988.

Joao Rodrigues, Maria, "Introduction: For a European Strategy at the Turn of the Century", in Joao Rodrigues, Maria (ed.), *The New Knowledge Economy in Europe: A Strategy for International Competitiveness and Social Cohesion*, Edward Elgar Publishing, Cheltenham (UK)/Northampton (MA), 2002.

Kanigel, Robert, *The Man Who Knew Infinity: A life of the Genius Ramanujan*, New York, Washington Square Press, 2016.

Krishnaswami, Sridhar, "India to Set Up Diaspora Knowledge Network" (Available through www.livemint.com)

Kelly, "China Ancient Education" (Available through www.chinahighlights.com).

Lambert-Hurley, Siobhan, "Indian Students at British Universities is a Tradition We Should Cherish and Protect", in *The Conversation*, 16 December 2016 (Available through www.theconversation.com).

Latour, Bruno, *Science in Action*, Harvard University Press, 1988.

Lerch, Irving A., «Truth, Justice, and the American Way: The Intersection of US Security and the Universality of Science», *APS News*, 8(6), 1999. (Available through www.aps.org)

Lu, Yongling & Hayhoe, Ruth, “Chinese Higher Learning: The Transition Process from Classical Knowledge Patterns to Modern Disciplines, 1860-1910”, in Charle Christophe, Schriewer Jürgen, and Wagner Peter (eds.), *Tansnational Intellectual Networks: Forms of Academic Knowledge and the Search for Cultural Identities*, Frankfurt/New York, Verlag, 2004.

Litten, Joshua, *American Educated Chinese Students and their Impact on U.S.-China Relations*, Honor Thesis, William & Mary College, 2009.

Lum, Kathryn Dominique, *India's Engagement with its Diaspora in Comparative Perspective with China*, European University Institute Robert Schuman Center for Advanced Studies, 2012.

National Science Board, *Science and Engineering Labor Force, Indicators Reports*, 2018.

National Science Foundation: *Doctorate Recipients from U.S. Universities*, National Center for Science, Engineering, and Statistics Directorate Behaviorist, 2017 (Available through www.nsf.gov/statistics/nsf18304).

Marklein, Mary Beth, “International Students Tops One Million for First Time”, *University World News*, 14 November 2016 (Available through www.universityworldnews.com).

Melendy, Brett H., *Asians in American: Filipinos, Koreans, and East Asians*, Boston, Twayne Publishing, 1977.

Meyer, Jean-Baptiste, Charum, Jorge & al., “Turning Brain Drain into Brain Gain: The Colombian Experience of the Diaspora Option”, *Science, Technology and Society*, 2(2), 1997.

Mishra, Alya, “New Science Policy to Upgrade Research and Collaboration, in *University World News*, 6 January, 2013 (Available through www.universityworldnews.com)

Mishra, Alya, “Brain Drain Counters Brain Gain in Attracting PhD”, *University World News*, 18 May 2013 (Available through www.universityworldnews.com).

Mitter, Rama, *The Era of Modernization in China* (Available through www.facinghistory.org)

Mohan, Raja & Chauhan, Rishika, *Modi’s Foreign Policy: Focus on the Diaspora*, Institute of South Asian Studies Working Paper, National University of Singapore, no date but around 2015.

Mozumder, Suman Guha, “Exploring Ways to Engage Indian Diaspora” 27 February, 2019 (Available through www.indiaabroad.com)

Nasscom-McKinsey Report, *Extending India’s Leadership in the Global IT and BPO Industries*, New Delhi, National Association of Software and Service, 2005 (Available through www.nasscom.org).

Puckhaber, Annette, “German Students Exchanges Programs in the United States, 1946-1952”, *GHI Bulletin*, n°30, 2002.

Roberts, John, Rodriguez, Agueda M., & Herbst, Jürgen, “Exporting Models” in de Ridder-Symoens, Hilde (ed.), *A History of the Universities in Europe: volume III. The Universities in the 19th and Early 20th Century (1800-1945)*, Cambridge, Cambridge University Press, 1996.

Raghavan, Srinath, “The Diaspora and India”, in *India Review*, 11(1), 2012.

Ramesh, Randeep, “India Reserves Half of University Places to Lower Castes”, *The Guardian*, 10 April, 2008 (Available through www.theguardian.com).

Germany’s Ministry of Education and Research, “Research in Germany: The Path to Professorship” (Available through www.research-in-germany.org).

Report of the High Level Committee on the Indian Diaspora (RHLC), *Executive Summary*, 2001.

Rhoads, Edward J.M., *Stepping Forth into the World: The Chinese Education Mission to the United States, 1872-81*, Hong Kong, Hong Kong University Press, 2011.

Rostow, Walt Whitman, *The Stages of Economic Growth: A Non-Communist Manifesto*, Cambridge, Cambridge University Press, 1960.

Rudinger, Georg, *Studie über den Verbleib von Teilnehmerinnen und Teilnehmern der GAIN-Jahrestagungen 2004-2011*, Bonn, DAAD & Bundesministeriums für Bildung und Forschung, no date.

Rutgers Today, “Indian Graduate in U.S. are Ready to Return to India”, March 7, 2011 (Available through www.rutgers.edu).

Saxnian, Anna Lee, *Local and Global Networks of Immigrant Professionals in Silicon Valley*, San Francisco, Public Policy institute of California, 2002

Singh Maini, Trividish & Ramaswamy, Sridhar, “The Need for Introspection in India’s Diaspora Policy”, *The Diplomat*, 1 October 2014 (Available through www.thediplomat.com)

Singh, Seema, “A Passage of Engineering Talent Back to India”, *IEEE Spectrum*, January 2003.

Sinha, Gunjan, “A Strategy for the Future”, *Science/AAAS*, 21 Septembre, 2007.

Sommerville, Will & Dhudwar, Amar, *Indian immigration to the United Kingdom*, IMSD Working Papers n°21, 2010.

Sridhar, Kala Seetharam, “Now that Qualified and Successful Indians are Returning Home, Let’s Not Disappoint Them Again”, *The Economic Times*, 14 January, 2017 (Available through www.economictimes.indiatimes.com)

Suri, Sanjay “Personal Touch Helps Prime Minister Strike Cord with the Community”, *New India Times*, 23 Nov 2001.

Thwing, Charles Franklin, *The American and the German University: One Hundred Years of History*, New York, MacMillan, 1928.

Todd, David, *Open Doors 1995-1996: Report on International Education Exchange*, Institute of International Education, NY, 1996.

Torres Stone, Rosalie “Beyond Asian Americans”, *Sociological perspective*, 49(2), 2006.

Tumbe, Chinway, *India Moving: A History of Migration*, Penguin Books, 2018.

Unesco Institute for Statistics (Available through www.data.uis.unesco.org).

Xie, Yu, Zhang, Chunni & Lai, Qing, “China’s Rise as a Major Contributor to Science and Technology” *PNAS*, 111(26), 2014.

Yingjie, Wang “Working with U.S. Higher Education: A Chinese Perspective”, in Shepherd Laughlin(ed.) *U.S.-China Educational Exchange: Perspective on a Growing Partnership*, NY, AIFS Foundation/Institute of International Education, 2008.

Zong, Jie & Batalova, Jeanne, “Indian Immigrants in the United States”, in *Migration Policy Institute*, 6 May, 2015 (Available through www.migrationpolicy.org).

Zong, Jie &, Batalova Jeanne “International Students in the United States”, *Migration Policy Institute*, 9 May 2018 (Available through: www.migrationpolicy.org).