

The New Silk Road: implications for higher education in China and the West?

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Recent geopolitical events, such as Brexit and the retreat from multilateral trade and cooperation by the USA, have created waves of uncertainty, not the least in the field of higher education, regarding international cooperation. Meanwhile, China is publicly seeking to take the lead in globalisation, developing its higher education and research systems at speed and actively seeking to cooperate with academic partners along the New Silk Roads, to attract talent (back). But under which conditions, whose definitions and based on what values? And what, if any, difference will the “New Silk Road” make in the global educational landscape?

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Introduction

The late 20th and early 21st centuries were periods of unprecedented globalisation, internationalisation and economic and cultural interpenetration. However, recent geopolitical events, some driven by reinvigorated populism in certain countries, are promoting a turn away from internationalism and away from an open society. Support for open borders, multilateral trade and cooperation are being weakened, globalisation is criticised and nationalism is looming. Brexit, questions around the (dis) integration of the European Union, the USA apparently turning its back on the world and attacks on universities (in, for instance, Turkey and Hungary) create waves of uncertainty

in higher education regarding international cooperation and the free movement of students, academics, scientific knowledge and ideas. Meanwhile, China stands to gain as its universities advance in global visibility. The growing uncertainties in the West may only make China more successful in its aim to attract Chinese talent educated abroad back to China and to enhance its impact on the global higher education landscape. Its New Silk Road (or ‘One Belt One Road’) project could potentially span and integrate major parts of the Euro-Asian continents, but likely on new and different conditions, and also for higher education.

This article first explores the challenges and opportunities arising from the rise of an

allegedly distinct system of higher education “with Chinese characteristics”, but then offers an alternative, historical perspective that places the rise of Chinese higher education more firmly in the global mainstream.

The backlash against globalisation in the West has surprised many. Growing and shifting economic inequalities had for too long not been fundamentally understood in their social consequences. Through the scholarly work of [Piketty \(2014\)](#) and [Milanovic \(2016\)](#) (among others) we gained more insight into the complex effects of decreasing global inequality (mostly caused by China’s rise), combined with increasing inequality within certain countries and regions, particularly in the West ([Rodrik, 2017](#)). This paradoxical impact on inequality is to a large extent reflected in higher education and research, hence the current criticism in the West against internationalisation and the lack of inclusiveness of higher education more generally ([van der Wende, 2017](#)).

It is in this context, in this shifting geopolitical reality, that China presents itself as willing to take the lead in economic globalisation. It seems determined to restore its central place in the world and claims to lead on a more sustainable and inclusive version of globalisation, which could further re-balance global inequality. However, Western countries are still digesting the political backlash from the growing inequalities spawned by globalisation within their borders. While this is leading to rising trade barriers between the USA and China, the European Union (EU) recognises the importance to strengthen relations with Asia ([Mogherini, 2018](#)), where it regards China “as one of its most important strategic partners” ([EC, 2018a](#)). But despite the EU’s strong trade and investment ties with China, concerns are growing over Beijing’s influence in certain member states (for example, Greece, Hungary and the Czech Republic), as well as its attitude towards intellectual property ([Elmer, 2018](#)).

Cooperation in higher education and R&D are major components of the new relations

between China and Europe. Agreements are being signed and an increasing range of activities is being undertaken. But how will this wave of new activities affect the tensions generated by the backlash against globalisation and growing scepticism to internationalisation in the West? How will it affect higher education’s role in an open society, based on values addressing inequalities, fundamental human rights and the rule of law, while these are increasingly under pressure in important parts of the world? How will China contribute to higher education as a global good? How will China’s soft power work out in higher education?

China’s New Silk Road (NSR) raises questions in many sectors: for instance, will it reshape global trade ([McKinsey & Company, 2016](#))? In the same fashion the question can be asked: will it reshape global higher education? What role is higher education expected to play in the implementation of the NSR? Is it perhaps a road towards higher education “with Chinese characteristics”? These questions will be the focus of a new study and are explored in this article. While we realise that the question whether the 21st century can be the *Chinese* century in higher education is one that would not have been asked even a decade ago ([Kirby, 2014](#)), previous research indicates that it is time to not just view China as a follower, but also look at its potential role as a global leader in higher education ([van der Wende and Zhu, 2016](#)). Hence, the initiative to undertake a comprehensive, and first of its kind, study of the possible implications of the New Silk Road for higher education and research cooperation between China and Europe, which is being implemented by an international and interdisciplinary consortium of scholars.¹

The conceptual framework considers China’s development in higher education and research both as an object and subject of globalisation. It draws on previous research ([van der Wende and Zhu, 2016](#)), and thus on the perspectives of China as being reshaped by international forces

and itself reshaping the global structure at the same time (Shambaugh, 2013; Wasserstrom, 2014). Meanwhile, we need to improve our understanding of globalisation. Globalisation in the East is diverging from globalisation in the West. Economic globalisation has become more Eastern-led, and Easternisation could become a force in international higher education, especially if a quarter of the world's best universities become Asian (Postiglione, 2015). This will further our understanding of the similarities and differences in politics between globalisation East and West and on how processes of regional integration (for example, EU, ASEAN) affect patterns of cooperation and competition in higher education and research (Chou and Ravinet, 2017; Huisman and van der Wende, 2004).

Reasons to assume that the New Silk Road will have an impact on higher education in Europe and beyond are three-fold:

- Like its historical versions (notably in the 16th and 17th centuries), the New Silk Road will be more than a trading route and will carry more than consumer goods alone. People, ideas and knowledge will travel along with mutual influence.
- China's re-emergence as a global power is among the most important geopolitical trends that characterise the early 21st century. And like all previous major geopolitical trends and events (for example, World War II, the integration of the EU and the fall of the Berlin Wall) that have impacted international cooperation in higher education and research (for better or for worse), the creation of this New Silk Road has the possibility of having a long-term impact.
- The size of China's higher education and R&D system, and the speed at which it develops both to global standards, is expected to affect that of its regional partners as well that of its global competitors.

There is, however, an alternative perspective, which we explore in the second part of this article, that the world is not so easily divided between "the West" and "the rest", and above all not simply between the West and China. Rather, modern Chinese institutions of higher learning have arisen not as uniquely Chinese institutions but along pre-existing international patterns that are to a considerable degree modelled on the leading, global, institutions of the day. From this perspective, the rise of Chinese universities and their growing global footprint (and not just along the New Silk Road), is both a competitive challenge for European (and American) institutions and also an opportunity for deeper cooperation in research and teaching. The emergence of Chinese universities as global players may prove less of a systemic challenge than an expanded marketplace for ideas and innovations, perhaps not unlike the challenges and opportunities for European universities with the rise of American research institutions in the 20th century.

The New Silk Road: emerging activities and looming perspectives for higher education

The "Silk Road" refers historically to land-based trading routes across Eurasia that, on limited occasions, connected East and Central Asian markets to those of the Middle East and Mediterranean. The term "Silk Road" is not an ancient one, but, like most modern academic concepts, is a German invention, the *Seidenstraße* first imagined in 1877 by the explorer Ferdinand von Richthofen. More useful as a conduit for ideas and religions than as a trading route, in economic terms, the "Silk Road" has been as moribund in modern times as it was for large stretches of history.

Yet the metaphor proved useful when the "New Silk Road" was announced in 2013 as a major new vehicle for China's global influence. It quickly became influential throughout 2014

as a key instrument of China's foreign policy, international economic policy and efforts at soft power. Higher education cooperation entered the agenda when President Xi announced that cultural exchange and cooperation in training and education were to be important elements of NSR and figured as a theme at the 2015 Euro-Asia Economic Forum. The focus was primarily set on China's neighbouring and mostly developing countries, which usually still have, unlike China, an abundant young labour force, yet a low(er) level of higher education infrastructure. The aim was to address the region's yawning skills gap, which invariably stood in the way of its economic ambitions, and to open a market of educational services for China. It was assumed that students from these developing countries would be interested in Chinese degree courses in applied fields such as engineering and medicine. Higher education also had to ensure that Chinese graduates would be familiar with local political, economic and geographic situations in the NSR countries, which led to a new vision for internationalisation of higher education in China (Qu, 2015; Zhao, 2015).

Leading Chinese universities were encouraged and funded to establish Belt and Road Institutes, think tanks and conferences to explore new alliances inspired by the NSR. Examples are the One Belt One Road Economic Research Institute at Renmin University, the Silk Road Institute at the Beijing Foreign Studies University, the China Academy of One Belt One Road Strategy at the Beijing International Studies University, the Road Research Center at Beijing Jiao Tong University, the Maritime Silk Institute at Huaqiao University and the University Alliance of the New Silk Road at Xi'an Jiao Tong University, which in 2015 invited some 60 universities from 22 potential NSR countries to explore opportunities for cooperation. These institutions saw that NSR presented great opportunities to further the impact of Chinese higher education on these

countries by, for example, establishing branch campuses, exchange programmes and offering scholarships.

The potential of the NSR for the EU's Higher Education and Research Areas (EHEA and ERA) is in principle positive. The EU has strong frameworks for multilateral cooperation in higher education and research that are increasingly "open to the world". China already participates in ERASMUS Mundus (as the largest provider of non-EU students for joint masters and doctoral degrees), in Horizon 2020 research projects on a co-funding basis, and individual researchers have access to European Research Council grants. EU-China cooperation in higher education, science and technology has been built up since the early 1980s, long predating the launch of China's NSR policy. Europe's interest in cooperation with China related since 2000 mostly to its need for foreign talent to face the substantial skills shortage and mismatch in relation to its ambitious knowledge economy growth strategy (van der Wende, 2015). A growing range of cooperation agreements on higher education, research and innovation have been signed by China with partners in Europe (both at EU and member country levels), integrated into the EU-China High Level People-to-People Dialogue (HPPD) in 2012. Since China overtook the EU's gross domestic spending on R&D in 2014, it has considered China as a key partner country. Agreements on Academic recognition and exchange were signed during a ministers' conference on "Building a China-EU education Silk Road towards the future" in October 2016. A third EU-China Innovation Co-operation Dialogue explored enhanced cooperation under H2020 in June 2017, as set out in the Roadmap for EU-China S&T cooperation (EC, 2017). The EU realises that its performance lead over China is decreasing rapidly, with China catching up at three times the EU's innovation performance growth rate (EC, 2018b).

The strategic interest of European universities in China is on the rise, stimulated by EU and China's NSR policy, and accelerated since 2016 when Brexit and the new US Presidency created uncertainty for international cooperation with the UK and the USA, which have long played such central roles in global higher education.

Shifting global flows

Recent data show a clear decline in international enrolments in these two main destination countries: the USA with 907,251 and the UK with 428,724 international students, out of which 291,063 respectively 86,204 come from China (UNESCO, 2018).

- US data indicated a decline of 3.3% in new international enrolments in the 2016/2017 academic year and 7% for the autumn fall of 2017. Survey data revealed the new political environment and changes to visa policies as the main reasons (WES, 2017a based on IIE data). Most recent data confirm that after consistent growth up to 2016, 2017 showed an overall drop of 3.75% in international enrolments, with a downturn of around 6% in S&T fields at the graduate level (NSB, 2018).
- For the UK, the decline in the growth of international students has been sharper than the global average since 2012 (British Council, 2017). Consequent upon Brexit, international applications for 2017 fell by 5% and those from the EU by 9%.

Meanwhile, China is actively trying to attract more international talent, as it still faces substantial skills gaps (OECD, 2016). It is seeing the growth of its outbound mobility slow down since 2016, to 847,259 Chinese students abroad in 2017 (UNESCO, 2018), and has embarked on transforming itself from the world's top source for international students to becoming an international higher education destination,

which if successful, could have a radical effect on global higher education. In 2012, China's officials announced a goal of enrolling 500,000 international students by 2020, and it achieved 489,200 in 2017 according to Chinese statistics, representing a 10% increase over the year before (MoE, 2018a). China is now the third largest study abroad destination for international students, behind the USA and the UK (IIE, 2018).

UNESCO (UIS) data are more specific regarding higher education, including only bachelor, master and doctoral students (ISCED levels 5–8) who stay abroad for at least one year. Hence, the difference with data collected by, for instance, China and the USA (cited above), that may also include students at lower levels and who stay for shorter periods. Yet UNESCO also reports a strong growth of international students in China (over 350% in the last decade, from 36,387 in 2006 to 137,527 in 2017).

China's recent success in attracting more international students is attributed in part to the NSR countries, which now account for around two-thirds of all international students in China, outperforming the overall growth trend in inbound mobility for China, and expected to continue to drive further enrolment growth in the years ahead. Although the initial focus was on Central Asia, the largest contingents come from South Korea, Thailand, Pakistan and India, and nationalities that are sometimes lumped into the NSR basket are growing in numbers. The number of Indonesian students studying in China has grown by 10% each year since 2010. Indians and Pakistanis are pursuing medical degrees in China in ever greater numbers. Helping to drive this growth is increased fellowship aid for students from NSR countries. One source of financial support for students from NSR countries studying in China is fellowships funded by Chinese firms investing in those countries. When one adds in Chinese government fellowships, as many as

40% of international students in China receive scholarship aid, with Kazakhstan among the top receiving countries (Li, 2018; THE, 2017). Notable growth was also reported from Africa. However, so far only 10% came from Europe, against 24% of all Chinese overseas students going to Europe: a quite uneven ratio of 1:6 in absolute numbers (ICEF, 2017).

China's strong points are seen to relate to a more diversified range of source countries, large funding opportunities (scholarships), favourable visa policies and announced after-study work opportunities. Challenges lie in its political climate, hosting capacity at elite institutions, student satisfaction and language barriers (ICEF, 2017; WES, 2017b). Clearly, China is still quite a distance from balancing its in/outbound student mobility; 0.3 vs 1.9% of its total student population (OECD, 2017).

At least as important are the shifts in the return ratio of Chinese students that studied abroad. China is currently witnessing its biggest wave of overseas returnees in recent years. China's Ministry of Education noted a record high of 480,900 'returnees' in 2017, up 11.19% on the previous year, of which 227,400 have a master's degree or higher, up 14.90% (MoE, 2018b). Outbound-to-return ratios increased in the last decade from around one-third to 82% in 2016 (CCG, 2016, 2017). Programmes aiming to bring back Chinese who studied abroad, such as the 1000 Talents Program, demonstrated initially only partial success (Cao, 2008; Welch and Cai, 2011). Arguably, the trend was fuelled as an effect of the global financial crisis and increasing visa restrictions in the west, while economic growth continued in China and the range of Chinese government incentives was extended. Returnees, especially in science and technology fields, are offered generous domestic research funding and opportunities (Economist, 2018). Consequently, the stay rates of Chinese students in the USA decreased over the last decade (NSB, 2018), and are likely to be further affected as the USA intends to limit Chinese

graduate students to one-year visas if they are studying in fields like robotics, aviation and high-tech manufacturing—areas that China identified as priorities in its 'Made in China 2025' manufacturing plan, but which the USA sees as boosting strategically important industries where it has a global technological advantage (Wang, 2018). Such concerns also occur in Europe, regarding key technological areas such as the next generation IT, AI etc., where China's success may challenge Europe's position and its policy of full protection of private data (EC, 2018c), adding to the before mentioned concerns over intellectual property rights (IPR).

Can NSR become a new epistemic road, connecting with the large Chinese knowledge diaspora in Europe, including thousands of highly qualified Chinese researchers, acting as bridge builders between the two largest research communities in the world as suggested by Welch (2015)? Or will it be an interesting sideshow in the larger relationships between Chinese, European and American institutions? And how much ongoing activity is being re-badged to benefit from the NSR funding opportunities? Even in the best circumstances, many challenges for China remain in terms of skills mismatches, deficiencies and an unfavourable demography (Cao, 2017).

Challenges and implications for higher education and research cooperation between China and the EU

The geopolitical context for the NSR builds on the EU as China's largest trading partner (although the picture at the sub-EU level is very different), and as politically more open than the USA to recognising China's role in the creation of new global institutions, as demonstrated in 2015 by the range of European countries that quickly joined the Asian Infrastructure Investment Bank (AIIB), launched by China as one of the main investment vehicles for the

NSR. And more recently, when EU and China recognised their joint responsibility to work towards a more cooperative, rule-based global order, that is launching a plan to revamp World Trade Organisation (WTO) and counter US unilateralism.

But there are also significant challenges, including the EU's mostly absent Union-wide foreign policy, consequent weak coordination capacity over its member countries' diverging foreign policy interests, and fragmented immigration policies. Tensions in Europe's border regions—the Middle East, North Africa and Russia's disputed territories—heightened in 2016 after the failed coup in Turkey and when new security issues arose with Brexit, followed by the suddenly unstable relationships between the USA and Europe and China respectively. The precise itinerary of the Silk Road will therefore be impacted by geopolitical issues, including Europe's concerns about refugees, security, terrorism, energy supplies and issues of international legal order and human rights.

These concerns may explain why government leaders were mostly absent (although they sent representatives and observers) at the Belt and Road Summit hosted by President Xi in Beijing in May 2017. Despite the announcement of major extra investment from the Chinese side, such concerns seem to persist.

In higher education as well, despite increasing interest, the situation is not simply one of mutual benefit. Conflicting interests may rise in the higher education market, in the delivery of transnational education and in competition for students. Traditionally, Western institutions operated in China (for example, the University of Nottingham's Ningbo China campus), but now China is expanding its own higher education provision abroad. These include projects such as the recent investment by an external arm of Peking University in setting up a business school in Oxford and, more substantially, the building of a \$300 million campus by Xiamen University in Malaysia, with a goal of admitting

5000 undergraduate and graduate students by 2020 (Liu, 2017). Within China, regulatory tightening has caused the closure of over one-fifth of Chinese-foreign university collaborative programmes that were deemed substandard by the government (FT, 2018). Concerns also relate to trends in open access and open science as principles for mutual access to scientific results. Concrete agreements with China have been difficult to achieve in these areas so far.

There are questions surrounding China's political motivations in driving this project. The recently established Asian University Alliance, led by Tsinghua University with full support from the Chinese government, underpins China's aim to develop world-class universities based on Eastern educational philosophy and heritage. Improving the positions of Chinese universities in regional and global rankings would enable these institutions to attract the best academics and students, mitigate the brain drain from Asia to Western universities and could challenge the dominant 'Western voices' in the globalisation of higher education. Not only would this affect Western higher education systems that have benefited for decades from the influx of full-fee paying foreign students, it also presents itself as a tool for advancing China's soft power, that is, shaping the future of higher education across the region, and also globally on Chinese terms and on conditions favourable to China (Gunn and Mintrom, 2017; Huang, 2017b).

China's soft power aspirations, that is, the ability to attract and co-opt rather than coerce, use force or give money (hard power) (Nye, 2004), are clearly linked to its NSR policy, but the role that educational endeavours play in this is as yet unclear. Aspirations to expand soft power through partnerships such as Confucius Institutes have found welcome partners in many corners of the world, but have also given rise to criticism that they exist less to promote exchange than to extend Chinese state interests. International concerns have risen over activities of the Confucius Institutes

regarding their hiring policy, non-disclosure of contracts and limits on academic freedom in its curriculum. This led to the banning of Confucius Institutes from some Western campuses. Meanwhile, some in China worry that the Confucius Institutes have not been political *enough* and bemoan the high cost.

Certainly, the potential for Chinese universities to be in the vanguard of Chinese “soft power” has been limited in recent years by the tightening of ideological control on their campuses. The discussion of “Western values” in Chinese classrooms has been curbed by governmental guidelines launched in 2013, which were tightened in 2015. The Central Committee of the Communist Party of China placed top Chinese universities under tighter control in 2017 by sending out inspection teams from the Party’s top anti-corruption agency, with the task of identifying not only financial malfeasance but also lapses in political discipline. Some universities responded to “feedbacks” from these inspection teams by setting up “teacher’s affairs departments” to oversee increased ideological indoctrination of teaching staff (Ga, 2017). A clash of academic values erupted when the General Administration of Press and Publication in China urged Cambridge University Press in August 2017 to withdraw over 300 articles and reviews from *The China Quarterly*,² the leading scholarly journal on contemporary China, about sensitive topics such as the Tiananmen Square protests, the Cultural Revolution, Tibet, Xinjiang, Hong Kong and Taiwan. The publisher initially agreed, but reversed this decision when more than 600 scholars from around the globe signed a petition threatening to boycott all its journals.

China’s rise in global higher education—rebalancing global inequalities?

UNESCO (2015) confirmed that global imbalances are generally decreasing as the

North–South divide in research and innovation is narrowing, with a large number of countries moving towards knowledge economies and cooperation increasing between the regions. A very large share of the re-balancing effect is due to China’s rise on the global higher education and research scene. China now has the largest higher education system in terms of student numbers (>33 million) and comes second in terms of its share in world expenditure on R&D (China’s GERD is 19.6% compared with 19.1% for the EU and 28.1% for the USA, putting it second in position for in the world’s largest R&D budget in PPP) and for its world share of researchers (19.1%, compared with 22.2% for the EU and 16.7% for the USA) (data UNESCO, 2015). Most recent US data also confirmed that China has become—or is on the verge of becoming—a scientific and technical superpower (NSB, 2018; Samuelson, 2018).

As mentioned above, global inequality in higher education and research may be expected to decrease further, with new nationalist policies in the UK and the USA and the NSR pushing the balance in China’s favour. Shifts at the level of doctoral education are of particular interest. International mobility is far more prevalent at this level, with 24% of PhD students on average in OECD countries being international, against an average of 9% in all levels (OECD, 2016). In fact, the bulk of doctoral education is provided by relatively few institutions globally, notably in the USA and the UK, which host over 50% of all international doctoral students (UNESCO, 2015). For decades, Chinese PhD students undertook their studies in the USA and the UK in particular. Two decades of restructuring of China’s doctoral education has resulted in some adoption of the US model, for instance, in the role of coursework. But many challenges remain in Chinese doctoral education, regarding government control, quality assurance mechanisms and the quality of full-time faculty (Huang, 2017a). At the same time, the USA has

relied heavily on international doctoral students for its R&D and aimed to improve “stay rates”; especially for degree holders in STEM (science, technology, engineering, mathematics). The US’ vulnerability in this respect has been pointed out repeatedly (Proudfoot and Hoffer, 2016), and it remains to be seen whether it can maintain its R&D performance with fewer immigrant scientists in light of tighter visa policies. The same applies to the UK, as a likely outcome of Brexit.

China’s growth has greatly contributed to the increase in the number of researchers worldwide (21% since 2007, to 7.8 million in 2013), which is again mostly observed in STEM fields (all data for 2013 in UNESCO, 2015). However, this focus on STEM seems to result in a rather skewed development of China’s higher education system, concentrating in particular on progress in engineering and computer sciences. The Shanghai Ranking reported in 2015 that of the 100 top engineering schools, 39 were in Asia, 42 in the USA and only 19 in Europe. China’s top engineering schools started to dominate the list in Asia and ranked in the world’s top 10 for engineering and top 25 for computer sciences (ARWU, 2015). This trend is confirmed in the 2017 Shanghai academic subject ranking, in which China leads in four subfields of engineering with a Chinese university as number one, combined with an above 20% presence on places in the global top 50 for the field (Table 1) and in another seven subfields on one of these criteria (Table 2).

This picture is also clear from the Leiden ranking of 2017, in which China leads on impact in maths, computer sciences, physics and engineering, with an almost 50% dominance in the global top 50, almost completely filling the top 10 in each (Table 3).

While there is clearly still scope for growth in terms of impact as the percentage of publications in the top 10%, the combined performance in these fields (Table 4) underlines the enormous potential of Chinese institutions for further

Table 1. Subject fields in which China holds number one position and >20% of global top 50 (based on ARWU, 2017 academic subjects)

Subject field	Highest position	Number of institutions in global top 50
Instruments, science and technology	1	15
Metallurgical engineering	1	15
Mining	1	13
Telecoms engineering	1	11

Table 2. Subject fields in which China holds number one position or >20% of global top 50 (based on ARWU, 2017 academic subjects)

Subject field	Highest position	Number of institutions in global top 50
Civil engineering	1	8
Remote sensing	1	7
Mechanical engineering	8	10
Marine/ocean engineering	8	1
Chemical engineering	10	4
Energy science and engineering	10	13
Nanoscience and engineering	14	6

development in the global top league for these fields.

These skewed achievements reflect the significant share (43%) of China’s R&D that has been dedicated to development and building of S&T infrastructure and the relatively small (4%) share for basic research, as the OECD observed in 2015. Government policies put a striking emphasis on science and engineering. In the new “Double World-Class Project”, which builds on the previous 211 and 985 projects, 49% of the disciplines selected to become world-class are in science and engineering, followed by medical science and agriculture and forestry (22%), aiming for China to have around 40 WCUs by mid-century

Table 3. Scientific impact per field (based on Leiden ranking, *CWTS, 2017*).

Field	Impact (number of publications)		Impact (number of top 10% publications)		Impact (percentage of publications in top 10%)	
	Number of institutions in top 50	Highest position	Number of institutions in top 50	Highest position	Number of institutions in top 50	Highest position
Maths and computer science	23	1–8	16	1	1	10
Physics and engineering	25	1–5	17	3	0	—

Table 4. Combining all high citation papers (top 10% of research field), in math and physical sciences, 2012–2015 (based on Leiden ranking, *CWTS, 2017*).

World rank	University and system	High citation papers in maths, computing, physics and engineering
1	Tsinghua University, China	1421
2	MIT, USA	1420
3	UC Berkeley, USA	1360
4	Nanyang Technological University, Singapore	1190
5	Stanford University, USA	1184
6	Zhejiang University, China	1113
7	Harvard University, USA	1008
8	National University Singapore	975
9	Cambridge University, UK	936
10	ETH Zurich, Switzerland	842
11	University of S&T, China	835
12	Shanghai Jiao Tong University, China	834

and to generate significant global impact (Huang, 2017b). These investments seem to be strategically motivated in relation to China's technological innovation, as needed for economic growth, geopolitical and geostrategic positioning.

China's progress in the humanities and social sciences appears at first glance to be much less compelling. For these fields, Chinese schools are absent from the top 100 of either of the rankings mentioned above, and only 11% of new extra funding is dedicated to humanities and 18% to social science (Huang, 2017b). This does not of course mean that the Chinese humanities are not of global stature; they just

do not largely publish in international journals. Most scholars in the humanities outside China do not read Chinese, while almost all leading Chinese scholarship in the humanities is published in Chinese journals in the Chinese language, not in the kind of English-language international journals that dominate rankings in STEM fields. Social science scholars may have more choice but may find it difficult to strike a balance between local relevance and global impact in choosing the journals for their publications.

Overall, Chinese academics recognise that in order to grow from good to great in research, systemic change is required to support a truly

excellent research culture. This would especially involve faculty evaluation, reward and funding structures. There is a perceived need to shift individual researchers from extrinsic motivation (indicators, funding, publications) to intrinsic motivation (intellectual curiosity), and university administration to a model with more autonomy, less governmental intervention, healthy competition and a more rationalised system for performance evaluation (van der Wende and Zhu, 2016). Constraints regarding academic freedom and Internet access are being perceived by academics in the different disciplines differently and, to a different extent, much more so in the humanities and social sciences than in the natural sciences and engineering. This may be one reason why the STEM fields appear to be more internationally successful under the current Chinese university governance system than in the social sciences and humanities, which are expected to construct “systems of philosophy and social science with Chinese characteristics, style and spirit” (Huang, 2017b).

Such an uneven development could jeopardise the growth of Chinese top universities as truly comprehensive institutions, especially their ability to develop innovative practices in interdisciplinary fields, requiring a cross-fertilisation between (applied) sciences, social sciences and the humanities. It could also have a potentially skewing effect on developments in the sector globally.

We have painted above a picture of a world increasingly divided by great-power nationalism, with integrative institutions such as the EU apparently less strong than a decade ago. It is in this context that the New Silk Road initiative, emerging from an ascendant and increasingly assertive and authoritarian Chinese government, has given cause for anxiety, even as it offers new, multi-national avenues for cooperation.

There is, however, a danger in being so immersed in our immediate moment that

we may miss longer-term historical trends on the relations between Chinese and other international centres of higher education. So let us set out an alternative scenario below.

Detour from the Silk Road? The international origins and global aspirations of Chinese universities

China has, as of the 19th Party Congress of the Chinese Communist Party in the autumn of 2017, declared a “new era” of “socialism with Chinese Characteristics”. Universities across China are scrambling to establish centres and institutes to study the “thought” of President Xi Jinping on these and other matters. China, President Xi has said, will not have another Harvard or Stanford, but its own distinguished universities. And those should be places guided by Marxism and “serve the rule of the Chinese Communist Party and serve to strengthen and promote socialism with Chinese characteristics” (Xinhua News Agency, 2016).

While such rhetoric amplifies concerns about enhanced ideological controls and limited self-governance at Chinese universities, it is too simple to call this a “Chinese” model of higher education, as distinct from a “Western” model. Marx, after all, was a man of the West (though in time more influential beyond it), and the People’s Republic of China has a Western political system, with the structure of the Chinese Communist Party (CCP) party-state modelled on the Soviet Union of the 1950s.

Chinese universities, in both history and practice, are more “Western” still. As their history shows, the intellectual and indeed architectural foundations of every major Chinese university are international in origin.

A Western-style university system began to develop in China in the late 19th century, with the founding of the Self-Strengthening Institute (later Wuhan University) in 1893. Both the institutions and the system of higher education as a whole in the late Qing and early

Republican periods were heavily influenced by the higher education systems of Europe, Japan and the USA. Public universities developed strong ties with foreign entities. Tsinghua University was founded in 1911 with Boxer indemnity funds returned from America; with this funding came American influence evident in everything from campus architecture to the high numbers of alumni who furthered their study in America. Tongji University grew into a private and then public university in the 1920s from its origins as the German Medical School founded in 1907, and continued to maintain its German connections. Foreign influence was also evident in the significant number of universities and colleges established by various missionary groups, including St John's University, founded by American Anglicans; Yenching University, founded by American Methodist Episcopalians and Congregationalists; and Aurora University, founded by French Jesuits.

Many leading scholars trained abroad and returned to adapt a broad swath of foreign practices and ideas to the Chinese context, further diversifying the institutional landscape. Zhang Boling founded Nankai High School, but upon returning to China after studying under John Dewey at Columbia University Teachers College, transformed it into Nankai University, which became one of the top private universities in Republican China.

Even Peking University, founded as the Imperial University of Peking by direct edict of the Guangxu emperor in 1898, was deeply influenced by foreign models (Hao, 2013). Cai Yuanpei, the long-time president of Peking University, after whom that institution's 21st-century liberal arts academy was named, studied in Germany and France from 1906 to 1910 and again from 1912 to 1917 (Hayhoe, 1996). Prior to his European studies, Cai had passed the highest level (*jinshi*) of the civil service examination in 1890 and became a member of the *Hanlin* Academy (Zhang, 2000). Thus, Cai's training was grounded in both the

European ideals of academic freedom and institutional autonomy as well as the ethical values promoted in the Chinese classical canon. He used his position at the head of one of China's leading institutions to introduce a broad range of international practices into China's nascent system of modern higher education.

In 1922, the nominal but weak central government sought to adopt what Ruth Hayhoe has called an "American ethos" in primary and secondary education (Hayhoe, 1996). Legislation broadened the definition of "university" to include not just institutions dedicated to theoretical studies, but also those focused on professional or applied fields. This represented a shift from the German-influenced model, that drew a sharp distinction between universities and technical schools, towards a more inclusive American conception. It also introduced the system of credits, which allowed students greater freedom to customise their studies. Reflecting the ambitions of the state, the legislation established a board of managers to make administrative decisions at universities, seeking to limit the role of professors in university governance.

This system-wide American influence, however, was short-lived.³ As the Nationalist government consolidated power in Nanjing after 1927, it also began to exercise more centralised control over higher education. In the 1930s, it reorganised the higher education system according to recommendations from a League of Nations commission led by former Prussian Minister of Education C. H. Becker. Reforms, made with the encouragement of the commission and heavily influenced by Prussian models, led to increased government control over a nationalised system of higher education. If political authorities favoured more comprehensive universities in the 1920s, the 1930s saw emphasis once again placed on science, mathematics and engineering (Kirby, 1997).

As the Japanese army encroached upon Chinese borders and occupied urban centres, universities sought refuge in unoccupied areas. This movement began with the relocation of Dongbei University to Beijing in 1931, but reached a larger scale in the late 1930s as the Japanese army gained control in major cities like Beijing and Shanghai. By 1941, 77 of the 114 higher education institutions that existed in China before the start of the war had moved to temporary, safer locations (Israel, 1998). At the apex of the higher education system was the National Southwest Associated University (*guoli xinan lianhe daxue*), a conglomeration of Tsinghua, Peking and Nankai universities that remained a bastion of liberal thought and academic work despite its wartime surroundings. This changed, however, as the war of resistance transitioned to civil war and then to a new political regime, by which time most universities had returned to their original locations on China's eastern coast.

The higher education system was extensively restructured following the founding of the People's Republic in 1949 to support a planned economy on a Stalinist model. In the early 1950s, the higher education system changed rapidly to emulate Soviet approaches. In 1952, institutions were reorganised to focus on very specific tasks and subjects, often resulting in the separation of theoretical fields (such as biology, found in newly reorganised comprehensive universities) and related practical fields (such as agriculture, found in specialised, separate institutions). Moreover, there was a marked separation of teaching and research: universities were to be dedicated to the teaching and transmission of knowledge, while research activities were housed at separate academies that existed outside the higher education system (Hayhoe, 1996, 78). In all this, China was following the exact model of universities across the Soviet bloc, from East Berlin to Hanoi: a model of "Western", not Chinese, origin.

The short period in which Chinese universities were indeed governed by "Chinese characteristics", in the form of Maoist zealotry, was nearly their ruin. During the Cultural Revolution (1966–1976), Chinese universities became prominent and bloody battlegrounds for factional and ideological strife at national level.

Today, as we have seen, Chinese universities have not only rebounded but are taking on global leadership roles in engineering and applied science and more. Take the case of Tsinghua. A university founded more than a century ago to send Chinese abroad for their education, Tsinghua is now recruiting the best young leaders across the world to China as part of its new Schwarzman College, whose fellowships seek to displace the Rhodes Scholarship as the world's most prestigious.

With the exception of the era of Maoist madness, leading Chinese universities have been, and see themselves as, part of a web of elite global institutions, and today measure themselves above all vis-à-vis their counterparts in Europe and North America. They may have ever more students from the New Silk Road countries, but they recruit their faculty from⁴ and focus their research partnerships with the leading "Western" universities (Jia, 2018). However strict the current ideological crackdown under President Xi, which echoes back more to the 1950s than to the chaotic 1960s, the path towards global excellence of Chinese universities lies clearly in cooperation and competition with European and American institutions.

Students as a barometer for globalisation?

Chinese students, like Chinese universities, are much more oriented towards America and Europe than towards more adjacent nations. The New Silk Road may indeed bring with it additional opportunities for European

universities on the Western terminus of these routes, but Chinese students flooded to Britain and the Continent well before and quite irrespective of the NSR concept.

More than 800,000 Chinese students study abroad according to UNESCO, with the USA as by far the most popular destination, followed by Australia, the UK, Japan and the EU. Even in the USA, where the overall number of international students declined in the academic year 2016–2017, the number of Chinese students continued to rise, counting for approximately 35% of the nearly 1 million international students studying in the USA.

Let us pause here and ask the question—which relates to our opening questions about an age of possible de-globalisation: why *do* so many young Chinese still come to the USA, for example, even in the era of “America First” under Donald Trump?

They come in part because they are more qualified, in larger numbers, than ever before. This is in turn because of the expansion, quality and breadth of secondary education in contemporary China. Its leading public high schools now rank among the best in the world, and their graduates qualify for admission to the world’s most competitive colleges. Chinese university graduates are competitive to enter the world’s leading doctoral programmes—and the high percentage of Chinese in US PhD programmes, which admit students almost exclusively on the basis of academic merit, is proof of their quality. In 2016, Chinese doctoral candidates accounted for 34% of all first-year international doctoral students in the USA. And because no one can graduate from a Chinese university without having passed an English-language examination, the best Chinese graduate students are linguistically capable of handling the challenge of study in English-speaking countries.

The strengths of China’s education system are more appreciated abroad than at home. Although nowhere has higher education grown

more rapidly in recent years, in both quality and quantity, than China, within China there is much criticism. Chinese rankings of global research universities are much tougher on Chinese institutions than British or American league tables. And there is much that Chinese parents, students and faculty disapprove. Required classes are large. Good teaching is seldom rewarded. Good jobs do not necessarily await graduates of such a suddenly expanded system. And the open and unfettered exchange of ideas that is at the heart, at least in principle, of an American or European undergraduate education, is limited (Kirby and van der Wende, 2016a). The leading Chinese universities are all state-run and the Chinese Communist Party secretary normally outranks the university president (who in any event is subject to the Party). And under Xi Jinping, the growing role of the Party in higher education has become a challenge to the pursuit of “world-class” status by Chinese universities.

The challenge for China’s competitiveness in higher education comes down to a simple question: can “world-class” universities—however they are defined—exist in a politically illiberal system? Maybe, but only with a significant degree of autonomy. German universities in the 19th century faced many political pressures, but they were the envy of the world in part because they also had traditions of institutional freedom that fostered and at times protected creative thinkers. China’s universities today boast superb scholars and among the world’s best students. But these students are also forced to sit through required courses on Party ideology and politics, and they learn a comic-book version of the history of their own country. Despite new general education programs in the arts and sciences (Kirby and van der Wende, 2016b), in the realm of politics and history the distance between what Chinese university students have to learn in order to graduate and what they know to be true grows greater

every year. In an era of increased political control under Xi Jinping, in which empty political sloganeering takes up hours every week for students (not to mention for faculty and administrators), Chinese universities run the risk of graduating two kinds of “leaders”: cynics and opportunists.

Perhaps by default, then, American universities still enjoy their hour in the sun as innovative places to educate leaders. After all, real Chinese leaders are sending their children mostly to American universities and in increasing numbers (although at a slower pace than in previous years). One learns a lot about parents from where they send their children to study. In the 1920s and 1930s, China’s paramount leader, Chiang Kai-shek, sent his sons to study in two of the leading powers of his day: to the Soviet Union (Chiang Ching-kuo, to Moscow’s Sun Yat-Sen University of the Toilers of China, a school for revolutionaries) and to Germany (Chiang Wei-kuo, to the Kriegsschule München, a military academy). Today, the sons and daughters of China’s most powerful political figures—including President Xi and his arch-rival, former Chongqing Party Secretary Bo Xilai—have studied at the foremost American colleges and universities. Currently, even Peking University and Tsinghua University—the most prestigious and connected of institutions—lose students to top universities in America and Europe.

Chinese universities *can* become the best and most attractive in the world, and truly extraordinary efforts (the Schwarzman Scholars Program at Tsinghua and Yenching Academy at Peking University) are being made to attract global talent to China. For now, the influx of Chinese students to the USA—and also to Britain, Australia, Japan and the EU—(still) continues to grow. Increasing return rates indicate that in time, most of these students are likely to return to China, where they will make important contributions. Meanwhile, however, the massive and continuing

educational migration abroad may be due less to confidence in foreign universities than to a sense of doubt and uncertainty about China’s own institutions, especially under the current repressive and insecure political climate. In addition to sending their children abroad—their most valuable human capital—Chinese parents today are also sending real assets overseas, which is hardly a vote of confidence in China’s immediate future.

In sum, the “New Silk Road” may offer a road map for new directions for overseas Chinese investment and in time, research and study. It may lead, through new funding opportunities, to greater cooperation between Chinese and European universities. But at present it is too early to tell precisely how it will affect the long-term trajectory of patterns of collaboration (and now competition) between Chinese and international universities, be they in the old or new worlds. For all the (reasonable) fear that we have entered an age of de-globalisation, and for all the Chinese government’s rhetoric of building universities “with Chinese characteristics”, we can also see in the past and present of Chinese universities and students much more continuity and significant cause for optimism. Chinese universities remain firmly modelled on international prototypes of the 19th and 20th centuries and it is that company that they wish to keep, to compete in and to lead. The future of Chinese universities, just like the future of Chinese companies, is not in Central Asia. Their greatest challenge is at present at home, with the revival of an ideological campaign that limits debate in the humanities and social sciences, even as Chinese researchers become recognised as global leaders in the pure and applied sciences. Meanwhile, as a significant element of the next generation of Chinese scholars continues to pursue advanced degrees abroad, we remain confident that, if Chinese leadership is needed for the next age of internationalisation, the talent and traditions of cooperation are there.

Endnotes

¹ See *The New Silk Road: Implications for Higher Education and Research Cooperation between China and Europe*. <https://www.uu.nl/en/organisation/centre-for-global-challenges/projects/the-new-silk-road>.

² See <https://www.cambridge.org/core/journals/china-quarterly>.

³ American influence in education still persisted at an institutional level throughout this period, particularly in colleges and universities established by American missionary groups. For more on this subject, see [Bays and Widmer \(2009\)](#).

⁴ A group of Shanghai-based universities has launched a joint recruitment drive for professors in the USA in October 2017, see http://www.china.org.cn/china/2017-10/24/content_41782596.htm.

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