The OBSERVATORY
on borderless higher education

Report

Realising the Global University: Part Five

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Position pieces by Dr Barbara McFadden Allen, Professor Anthony Welch and Zhang Zhen

The Observatory
on Borderless
Higher Education
Woburn House,
20-24 Tavistock Square,
London WC1H 9HF
United Kingdom
Tel: +44 (0)20 7380 6743
Fax: +44 (0)20 7387 2655
www.obhe.ac.uk

WUN
Worldwide Universities Network

Realising the Global University: Part Five

Abstract:

This is the fifth in a series of reports linked to the "Realising the Global University" conference taking place on 15 November 2007, which the Observatory is co-sponsoring with the Worldwide Universities Network (WUN). Each report consists of two position pieces exploring the idea of the 'global university'. In this instalment, **Barbara McFadden Allen** considers the factors affecting the success of global higher education partnerships and **Anthony Welch** and **Zhang Zhen** examine the implications, for both South and North, of the Chinese knowledge diaspora.

About the Authors:

Dr Barbara McFadden Allen is Director of the Committee on Institutional Cooperation (CIC), a consortium of 12 American research universities.

Professor Anthony Welch works at the University of Sydney, Australia. He is a Fulbright New Century Scholar currently completing major studies of the internationalisation and globalisation of higher education with a focus on China and South East Asia.

Zhang Zhen is a Lecturer at Tianjin University, China, who will begin her PhD on the Chinese knowledge diaspora in 2008, at the University of Sydney, Australia.

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1 Global Collaboration: Benefits and Challenges in Developing Partnerships
By Barbara McFadden Allen

1.1 Why collaborate?

A compelling and remarkable vision of a 'meta-university,' an "electronically enabled global collaboration of teachers and researchers," is described in an article by Charles Vest, President Emeritus of the Massachusetts Institute of Technology.[1] The attainment of this vision rests on the creation of robust and interlocking partnerships among researchers, among universities and across international borders. Such partnerships require thoughtful planning and nurturing, which are essential to maximise opportunities, manage expectations and deliver results.

Already, there is evidence that academic publishing and research are increasingly collaborative activities, suggesting that the time is right to be intentional about the formation of partnerships. Three data points drawn from a report issued by the National Science Foundation (an agency of the US government) illustrate and frame the opportunity:

1) The US share of scientific publishing as a percentage of worldwide publication is declining. Of the scientific papers published around the world (including the social and behavioural sciences), the percentage from the US has slowly but steadily slipped from 38.1% (1988) to 30.2% (2003). The decrease in engineering/technology is more obvious: 42% in 1988 and 24% in 2003. The US is twelfth in the world in the number of scientific papers per capita. Sweden is first, followed by Switzerland, Israel, Finland and Denmark.

2) More highly educated citizens are staying in their home country. By 2000, home countries were absorbing relatively more of their highly educated citizens than in the past. In 1990, one in six resided abroad; by 2000 that number had dropped to one in nine, indicating that much of the world had developed an infrastructure capable of using these citizens productively. Among developed countries, the UK has the largest group of citizens with formal post-secondary education residing abroad, with Germany in second place. China, India, and the Philippines each have approximately 1 million highly educated expatriates.

3) International collaboration in science and technology is accelerating. The manner in which science and engineering are conducted is increasingly international. In 2003 about 20% of the world's scientific and technical articles had authors from two or more countries, compared with 8% in 1988. One-quarter of articles with American authors have one or more international co-authors, similar to the percentages for Japan, China, and the Asia-8. [2]

Other data sets from other countries, and representing other disciplines, could be produced to further illustrate the points.

In this world, where no country dominates the scientific publishing output (one measure of research productivity), where international collaboration among scientists is on the rise, and where a higher proportion of educated citizens are staying in their home country, universities must find ways to strategically expand their research portfolio to fuel international collaboration. Our ability to engage the world's greatest thinkers depends upon this. Just as many of us understand that strong collaboration domestically enables universities to leverage investments and maximise opportunities for students within a region or a country, we realise that international partnerships are essential to support world-class research centres. It may no longer be practical to imagine that any one

[1] Vest, C. (2004) "Collective Efforts Lift us all to the Starry Heights". *Times Higher Education Supplement*, 5 November. URL: http://web.mit.edu/spotlight/collective-efforts/. Last accessed 8 November 2007.
[2] National Science Foundation, *Science and Engineering Indicators 2006*. URL: http://www.nsf.gov/statistics/seind06/front/about.htm Last accessed 8 November 2007.

university can possibly attract all of the best and brightest faculty and scholars from around the world. We must rethink the notion of just who (and where) our faculty are.

1.2 Elements of successful collaboration

The examination of existing, successful collaborative research enterprises offers insight into how to think about and construct effective inter-institutional academic partnerships.[3] Successful collaborations are often:

- Grounded in an established area of research or academic excellence;
- Tied to institutional strategic objectives;
- Supported at the highest levels of university administration (decision makers and investors are clearly at the table);
- Based on clear missions and goals, with strong administrative underpinnings; and
- Alert to strategies for evaluation of the efforts on a regular basis.

When an initiative is buttressed by these conditions, it is capable of attracting the "right" partners; that is, leaders in the disciplines and in relevant industry and government sectors.

In order to create these conditions, potential partners must enjoy a strong measure of trust, and must be able to work collaboratively. However, building these trusting relationships and establishing competency in collaboration take time. Leaders of these efforts must, from the outset, be strategic, focused and patient. Small and early successes often provide the building blocks for larger, deeper and systemic collaboration.

1.3 Challenges in collaboration

Conflicting interests, institutional cultures and physical distance can pose substantial barriers when reaching across academic disciplines, across sectors and institutions and across international borders. Bureaucratic requirements, disparate incentive and reward systems and organisational structures can exacerbate those challenges. Therefore, the following cautions are advised:

- Collaboration is difficult in the best of circumstances, and while it is possible to use new technologies for communication and collaboration, we haven't evolved enough to eliminate the need for human interaction. Of course, one must strike a balance between discussion and action.
- Collaboration is time consuming, especially initially. It may take many months (sometimes even years) to establish trust among partners. Each success builds the trust and shortens the cycle. Leaders must have deep reserves of patience, tact and diplomacy.
- Focusing too much on how to collaborate (bylaws, memos of agreement and other bureaucratic apparatus) and not on why will result in a weak shell, not actual engagement.
- One must guard against the proliferation of new management or bureaucratic structures, and try to use or modify existing university structures to meet new needs for collaboration.
- The right partners must be involved from the outset: those who make institutional decisions and commitments, as well as leading faculty and researchers. Without the right partners, promises are made that cannot be kept, and activities are launched without regard to institutional objectives.

[3] Zepeda, Y. (2007) *Research Collaboration: Opportunities for CIC Universities*. Committee on Institutional Cooperation. Champaign, Illinois. URL: http://www.cic.uiuc.edu/groups/CICMembers/archive/Report/researchcollaborationreport07.pdf. Last accessed 8 November 2007.

1.4 Specific collaborative opportunities

Each university must begin its examination of an opportunity from the perspective of its institutional goals. Additionally, connections between the international, academic and research leaderships on a campus must be established to optimise structures that support collaborative international research and that build a shared vision among the partners. With this self-awareness as a foundation, the following steps might be worth exploring:

- A single institution might focus its attention on existing/emerging “centres” of research and academic excellence in order to attract international partners, perhaps by diverting or focusing “seed” monies to provide incentives for the expansion of these centres into the international arena.
- A group of institutions might build large-scale digital publishing or repository efforts. A collaboration among international disciplinary societies and universities could be extraordinarily powerful in opening up research results more quickly.
- A consortium could develop a clearinghouse for information on research partners, coupled with information on access to resources to support such partnerships, which might nurture “bottom-up” initiatives.

Further, from these research partnerships a whole array of useful activities might emerge, everything from sharing lab facilities to faculty and student exchanges and recruitment to study abroad and language and cultural enrichment programmes. That is, the research partnership might be a springboard for an array of valuable activities.

1.5 An aspirational model: CERN

It is always useful to have in mind a benchmark for collaboration – an ideal to which one might aspire. The European Organisation for Nuclear Research, CERN, comes to mind as such a benchmark. Founded in 1954, CERN now engages some 6500 visiting scientists, half of the world's particle physicists, who come to CERN for their research. They represent 500 universities and over 80 nationalities. At their founding they articulated these goals:

> The Organisation shall provide for collaboration among European States in nuclear research of a pure scientific and fundamental character, and in research essentially related thereto. The Organisation shall have no concern with work for military requirements and the results of its experimental and theoretical work shall be published or otherwise made generally available.

What is so compelling about the CERN model is that it completely changed the research game for physicists, and it has built and sustained collaboration over more than fifty years. It is indisputably the world-class facility for physics research.

What can we do that won’t just modify structures, that won’t have us just tinker around the edges, but will substantially change the game? That’s where we need to set our sights.

2 The Rise of the Chinese Knowledge Diaspora: Possibilities, Problems and Prospects for South and North
By Anthony Welch and Zhang Zhen

2.1 Introduction: China and the global knowledge network

The stratified nature of the global knowledge network underlines the fact that flows of intellectuals are still very largely from the South to the North. Indeed, the existing global inequality of knowledge creation and application is being exacerbated, as wealthy countries of the global North compete to attract research talent from poorer countries of the South.

Where do China's universities stand within the global knowledge system? Notwithstanding China's spectacular annual GDP growth rate (around 10% since 1990), its developing country status and the fact that its universities only emerged from the Cultural Revolution some thirty years ago have limited its higher educational system to peripheral status, albeit a giant periphery. China now produces close to 4 million graduates annually, and sustains a vast range of scholarly publications, many with huge circulation figures. Great strides in scientific achievements and visibility have been made over the past decade or more.

The Chinese government deliberately developed a number of its 1,600+ degree-granting institutions into international-class institutions. The State Education Commission (now the Ministry of Education) used the 2-1-1 Project to invest in around 100 key universities, to accelerate their progress. Currently, 72% of government-funded research programs are carried out within designated 211 universities. Within the 211 universities, 87% of teaching staff hold doctoral degrees, while 96% of state key labs and 85% of state key disciplines are sited in such universities. The succeeding 9-8-5 Project was even more selective, with planned investment in the nation's leading universities (Peking, Tsinghua, Fudan and others) of around US$4 billion.

The ritualistic assertion that English is the language of global communication and scientific research belies Mandarin's rising status. Within the Asia-Pacific region, the number of Chinese-speakers and English-speakers is almost identical, in both cases around 1 billion. China's rising strategic, economic and cultural significance, and its worldwide diaspora of 35 million, is boosting demand for educational services in Mandarin, as evident in the rising number of overseas students at its universities (now over 100,000), the explosion of Chinese material on the web, and the proliferation of Confucius Institutes (devoted to the study of Chinese language and culture) worldwide: initially 100 such Institutes were planned, but now the target is 500.

2.2 Remaining challenges

Notwithstanding the enormous progress made within China's higher education system, and the undoubted commitment on the part of its people and government to the importance of education, significant challenges remain. Massive annual enrolment increases (between 21.2% and 34.5% in 1999-2004) left universities struggling to cope with the deluge, and weakened quality. Student-staff ratios have worsened appreciably, from around 5:1 in 1990 to almost 18:1 by 2006.

In addition, World Bank data show that the proportion of GDP spent on education as a whole in China is still only 3%, and some have raised doubts as to the feasibility of current plans to raise it to 4%. This resource-squeeze exerts further downward pressure on quality. The well-known Shang Hai Jiaotong index of the world's leading research universities lists the top Chinese University (Tsing Hua) as no more than 20th in the Asia-Pacific region, and no higher than 150th worldwide. Peking University fares even worse, no better than 25th regionally and 200th worldwide. Nonetheless, China's persistent drive to boost its representation in international citation indexes is proving effective: 77,395 papers from China appeared in the major international science and engineering citation indexes for 2002, propelling it into fifth place worldwide.

Brain drain constitutes a further challenge to the Chinese university system, although here again there are changes. Ministry of Education data indicate that from 1978-2006, 1,076,000 Chinese students travelled abroad for study purposes. Of these, around 275,000 have returned, although 580,000 are still supposedly studying abroad. By 2010, the number of Chinese students abroad should reach 200,000, and although more opportunities in a dynamic China are encouraging more to return evidence suggests that China's very best and brightest may still be remaining abroad.

2.3 The rise of the Chinese knowledge diaspora

Global knowledge diasporas are growing in size and significance, sustained by both increases in global migration flows, notably of the highly-skilled, and the increasing ubiquity and density of information and communication technologies (ICTs). National Science Foundation (NSF) data show that only half of international doctoral or post-doctoral scholars in the US return to their country of origin within two years. For Chinese and Indian students in the US, the figures are as low as 10-12%. In the 1990s, approximately half of all doctoral recipients from China gained further opportunities in the US. The impact on research productivity and patent applications is substantial. In Australia, which shows the highest net brain gain of all OECD countries, the proportion of skilled migrants rose from 39.8% of the total in 1990-1 to 46.8% by 2003-4, while for China-born migrants, it was more than half. Of long-term Chinese immigrants to Australia, over 80% currently have degrees and fall within the three highest occupational categories, some becoming academics after gaining Australian doctorates.

2.4 The Chinese intellectual diaspora: an Australian example

Among such intellectuals, nearly all wish to maintain bridges to the world of Chinese scholarship within both China and the diaspora. But how are connections maintained? A recent study was conducted at a large metropolitan research university in Australia with longstanding China relations and over 8,000 international students of which the largest component are mainland Chinese. A rising numbers of its academic staff are also from China.

All interviewees reported establishing scientific communication with their mainland counterparts, often characterising such collaboration as a means to develop Chinese scholars' reputations and boost China's national competitiveness. Forms of communication were diverse, including reciprocal visits, publication in mainland journals and teaching.

All reported valuing their collaborations with other Chinese scholars. Qualities of Chinese scholarship, industrious study habits and courtesy were appreciated by interviewees, as well as the ease and familiarity of dealing with other Chinese. Clearly, sharing cultural and linguistic backgrounds contributed to closer two-way scholarly communications. In this way, respondents argued, the gap between centres and peripheries could be reversed. Instead of the South enriching the knowledge resources of the North, the strength of the latter could contribute to the development of the former.

2.5 Complexities of communication

As with other studies of the profession, **gender** influenced patterns of collaboration. Female interviewees noted the importance of establishing their career before forming collaborations. Consistent with the centuries-long heritage of Confucianism, **rank** was particularly important among mainland scholars when contemplating collaboration with colleagues abroad. **Leadership** was certainly seen as important, but was experienced as both a positive and a negative. It can facilitate

effective scholarly contacts between Chinese expatriate scholars and the home country, although not always. While communication between scholars with common interests was spontaneous, leadership support by mainland counterparts were seen as critical to successful collaboration. Too often, it seemed, the mission of the delegation ended with the conclusion of their visit.

2.6 Conclusion

The significant knowledge and expertise of its intellectual diaspora for China's development again supports other studies of diasporas, which sees their exodus as both a loss and a potential gain for the mother country. This is all the more so in light of the deepening interconnectedness of the research world. Global knowledge diasporas herald novel ways of conducting research in both the natural and social sciences that can contribute to research and development in both the homeland and the new land and can form knowledge bridges to benefit both sides. The potential for exploiting complex international neural knowledge networks is substantial for countries and regions, and has the potential to shrink distance, enhance quality and reduce time taken for research initiatives. The benefits are to the research communities across the Chinese knowledge diaspora.