Yuzhuo Cai & Vuokko Kohtamäki (eds)

Transformation of Higher Education in Innovation Systems in China and Finland

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TAMPERE UNIVERSITY PRESS

Sales
kirjamyynti@juvenes.fi
http://granum.uta.fi

Page design Maaret Kihlakaski
Cover Mikko Reinikka

ISBN 978-951-44-9268-6
ISBN 978-951-44-9269-3 (pdf)

Suomen Yliopistopaino Oy – Juvenes P
Tampere, Finland 2014

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Introduction

Yuzhuo Cai & Vuokko Kohtamäki

This book publishes selected papers of the 2nd Sino-Finland Higher Education Forum—Transformation of Higher Education in Innovation Systems in China and Finland. The forum was held between 19th and 20th September 2011 in Tampere, Finland. It was jointly organised by the University of Tampere, University of Helsinki, Peking University and Beijing University of Technology.

Since the 1990s, the concept of innovation system, both national and regional, has been accepted by many countries around the world as a strategy to enhance the competitiveness of national/regional economy and achieve sustainable development. Innovation systems are generally recognised as comprising of the complex functions and interactions among various actors (including government, enterprises, universities, and research institutes) and institutions, such as governmental policies and social norms (Edquist, 1997; Kumaresan & Miyazaki, 1999; Lundvall, 1992; Nelson, 1993; OECD, 1999). Among the actors, the role of universities are widely regarded as crucial (Etzkowitz, 2003; Godin & Gingras, 2000; Mowery & Sampat, 2004).

While there is a large volume of published studies describing the relations between universities and other actors in innovation systems, little attention has been paid to the corresponding changes within higher education, particularly within higher education institutions. The aim of the Forum was to bring the higher education researchers, policy makers, administrators and other experts together to exchange experiences and opinions and to explore current challenges of the role of higher education in innovation systems with a particular focus on China and Finland. Ideally, new ideas and best practices could be found by comparing the systems and

the policies. In addition, the forum gave a great opportunity for mutual learning of the rich administrative traditions and cultures of both countries.

While China has maintained very rapid economic growth over the past three decades, the low-wage and labour intensive manufacturing as a main drive to economic growth has been challenged by emerging competitors in Southeast Asia as well as by China's domestic environmental degradation. To ensure sustainable progress in the future, China has recently shifted its economic priority from labour-intensive to capital-intensive and technology intensive production (OECD, 2007). Since the turn of the new century, China has been boosting investment in science and technology, and taking steps towards building a high-performing innovation system and knowledge economy. A strong goal is to turn China into an innovative country by 2020 (State Council, 2006), which requires strengthening the engagement of universities with the economy.

To better achieve the goals, China is eager to explore the successful experiences and practices of advanced countries for the benefit of its own development. One country China particularly wants to learn from is Finland, which is often cited as one the most successful innovative countries in the world.

Finland is a small country, but it has a well-advanced innovation environment. The development of the Finnish innovation system has been systematic and the process has a strong support from the Finnish national government. The innovation policy has been developed consistently and due to that the innovation environment has a firm systematic and institutional framework. Investing in the innovation system also in weak economic times has appeared to be one of the success factors in Finland. Regardless of its successful records, there is also room for improvement in Finnish innovation systems. In the recent evaluation by the Finnish Ministry of Education and Finnish Ministry of Employment and the Economy (2009), the Finnish innovation system was criticized to be dispersed with a huge number of small players, with overlapping roles and with a too domestic orientation. Therefore, the recent policy highlights the importance of strong and systematic linkages between various innovation actors. This means that all levels of organisations and actors, including higher education institutions, researchers, research institutes, companies and public institutions, are working in interaction benefiting the economic and cultural development of the whole society. This implies a very broad-based innovation policy emphasising wide societal consideration. The development of efficient and successful innovation environment requires strong and long-term strategic orientation of individual innovation actors and their national and international networks.

China and Finland are quite different countries in terms of country size, history, social and economic backgrounds, but the higher education systems in the

two countries are comparable as both have undergone the transformation from a centrally controlled governance model to a more decentralised one (Cai, Kivistö, & Zhang, 2011). The two countries are also comparable in terms of development of innovation systems and corresponding reforms in higher education.

As a response to the demands of the innovation systems, both countries have recently launched higher education reforms. The main milestones for the development of higher education systems in both regimes have been found in public policies, namely, Middle and Long Term Education Reform and Development Plan (2010–2020) in China, and the Structural Development of the Public Research System (2005) as well as the New Universities Act (2010) in Finland.

The foundation for the comparison is that in both countries the governments have been important catalysts in the transformation of higher education systems and institutions to more adaptable and responsible to the needs of knowledge economy. It is worth mentioning that the USA and Finland are demonstrated as two typical contrasting models of developing innovation or information society (Castells, 2000; Castells & Himanen, 2002). The former is characterised by a strong market drive, and the latter manages to develop its innovation system and achieve economic success with a vital role played by the government. Like Finland, the creation of national innovation systems in China is mainly driven and coordinated by national policies.

The papers selected from the forum are categorised into six sections, namely 1) Theoretical insights and emerging practices, 2) Finnish experiences, 3) Chinese higher education systems, 4) Roles of universities in innovation systems in China, 5) Transformations in Chinese higher education, 6) Comparative perspectives and cooperation between the two countries.

In Section 1 (Theoretical insights and emerging practices), there are two chapters. In Chapter 1, Mika Kautonen and Mika Raunio emphasise that innovation activities and innovation systems are not only domestic, but increasingly trans-national crossing the national borderlines and continents. The authors analyse new spatio-cognitive spaces and the role of higher education institutions in trans-national settings. For that purpose, the article introduces the key concepts in analysing and measuring globalisation of innovation, presents theoretical categorisation of globalisation of innovation and applies the categorisation by measuring innovation activities in trans-national settings.

In Chapter 2, Ari-Veikko Anttiroiko analyses globalisation and the pressures influencing the position of universities in global innovation ecology. He focuses on the idea of an entrepreneurial university as a way to respond to current environmental pressures and challenges. The article discusses the idea of entrepreneurial university and the effects this idea has in reshaping universities' relationships with stakeholders and with society as a whole.

The Section 2 (Finnish experiences) also includes three chapters. In Chapter 3, Anu Lyytinen empirically considers innovation actors, namely Finnish polytechnics (universities of applied sciences), by analysing three case study institutions and their ways towards entrepreneurial institutions. The elements of entrepreneurial university as suggested by Burton Clark were applied as theoretical frames in this study. The article suggests that the capacity building for regional engagement is the major strategy of entrepreneurial institutions. The role of the senior and middle level management in this development is specifically discussed. Furthermore, this article analyses how the three case study institutions were attempting to find their diversified profiles and create linkages to other innovation actors.

In Chapter 4, Vuokko Kohtamäki explores the government-led national university reform which aims to promote more flexible opportunities for universities to operate in the innovation environment. In this reform, capabilities of strategic management of universities are also emphasised. The author explores the corporate level strategies of two universities by focusing on the environmental factors identified by strategies of each university, the strategic priorities articulated by the universities in their strategy documents and the formal and other purposes of university level strategy as a whole.

In Chapter 5, Jarkko Tirronen tacks with mergers in Finnish higher education, one important dimension of recent Finnish higher education reforms. Particularly, he analyses the process of merger of two Finnish universities (University of Joensuu and University of Kuopio), which resulted in the University of Eastern Finland. He finds the case is successful in terms of its smooth implementation and synergy achieved. While many university mergers remind painful experiences, the lessons learnt from the case may be very valuable.

The Section 3 (Chinese higher education systems) is featured by two chapters. In Chapter 6, Rui Yang examines the tensions in the interactions in higher education between the traditional Chinese and the imposed Western modes of thinking. The Chinese approach of dealing with the tension is borrowing useful practices from the West to catch up the West but preserving the Chinese essence. He argues that China's strong catch-up mentality in its contemporary higher education policies is only responsive, rather than based on systematic understandings of cultural roots.

In Chapter 7, Chongzheng Sun and He Zhu review the development of Chinese higher education and particularly describe the features of several types of higher education institutions, namely national first-class research universities, regional high-level universities, regular bachelor-level universities and colleges, vocational higher education institutions, and private universities and colleges. This paper provides a useful map for further understanding the roles of higher education institutions in Chinese innovation systems.

The Section 4 (Roles of universities in innovation systems in China) is composed of four chapters. In Chapter 8, Jiu Liu uses the innovation approach and social network theory to analyse the role of universities in firms' innovation networks by investigating three leading manufacturing companies in Sichuan province of China. The study found that universities played a small and peripheral role in the case firms' innovation networks and provided explanations and suggestions for improving the situation.

In Chapter 9, Xiaogunag Shi and Yongxia Ma discuss the roles of research universities in development of national innovation systems in China. In their view, in order to enhance the role of research universities as a building block of national innovation systems, there need to be solved a number of dilemmas and problems concerning the traditional ideas of universities, university administration system, as well as quality of research and teaching in universities.

In Chapter 10, Xiuyan Wang dialectically discusses how regional higher education institutions contribute to the national innovation systems in China and in turn how national innovation systems shape the strategies and development of national higher education institutions.

In Chapter 11, Baohua Jin and Jin Cao explain a very Chinese concept—regional high-level universities and further describes the roles of such universities in regional innovation systems. They also provide suggestions on how these universities could better integrate into the regional innovation systems and foster the development of regional economy and society.

The Section 5 (Transformations in Chinese higher education) is the largest section with 6 chapters. In Chapter 12, Zhihong Li reviews the development of China's higher education teaching evaluation system with a particular emphasis on the first five years of implementation of the "Scalar Evaluation of Undergraduate Teaching Quality" launched in 2003. The paper also suggests five teaching evaluation models in the future.

In Chapter 13, Baocun Liu, Anmei Zhang and Tengteng Zhuang explore the Partner Assistant Project launched by the Chinese government with an aim to promote balanced development in higher education between eastern and western regions in China. They particularly analyse the impact of the project and point out the challenges in policy implementation.

In Chapter 14, Linqin Su and Jin Sun provide a scenario of governance of higher education institutions according to the 1998 Higher Education Law, which is the principle legal document for governing and managing higher education institutions in China. However, as they point out, there are still gaps between what is provided by the law and what is operated in practice.

In Chapter 15, Zhanrui Wang explores the unique characteristics of university administration systems in Chinese higher education institutions. Compared to Western "bottom-heavy" academic organisations, where responsibilities are mainly taken by faculties at the grass-root level, Chinese universities are "top-heavy", meaning that the administration at the top is overpowered. Realising the negative influences of such organisational structure on initiative and enthusiasms of faculties in teaching, research and innovation, Chinese universities started to change and experiment with new modes of governance.

In Chapter 16, Nian Xiao takes a close look at the teaching reform in Chinese regional universities in the transformation of Chinese higher education since the end of 1970s. The tendency is that universities have more autonomy in developing their own ways of teaching. Meanwhile the reform of teaching is not only simply about teaching methods, but involved systematic changes concerning missions of universities, teaching management, and research and teaching interactions, etc.

In Chapter 17, Dong Li studies one case of post-merger Chinese university by analysing institutional level leaders' influence on the merger outcomes. He finds some main challenges that the leaders have faced during the merger process.

The final section (Comparative perspectives and cooperation between the two countries) is contributed by two chapters.

In Chapter 18, Johanna Kallo captures an extensive research topic by discussing how common paradigms developed in the field of comparative education can be applied to a comparison of the Chinese and Finnish higher education systems. The core message throughout her article deals with a general challenge of comparability in all types of comparisons. She also considers the influence of mega trends like modernity and globalisation from the point of view of comparative research methodology.

In Chatper 19, Yuzhuo Cai and Seppo Hölttä discuss strategies of Finnish higher education institutions when establishing cooperation with Chinese higher education institutions. They argue that although there is no common recipe, a starting point for Finland to plan their strategies should be based upon seeking a match between their intentions and China's objectives.

References

Cai, Y., Kivistö, J., & Zhang, L. (2011). Introduction. In Y. Cai & J. Kivistö (Eds.), *Higher education reforms in Finland and China: experiences and challenges in post-massification era* (pp. 9–17). Tampere: Tampere University Press.

Castells, M. (2000). *The Rise of Network Society* (2nd ed. Vol. The Information Age: Economy, Society and Culture). Oxford; Malden, MA: Blackwell Publisher.
Castells, M., & Himanen, P. (2002). *The information society and the welfare state : the Finnish model*. Oxford: Oxford University Press.
Edquist, C. (Ed.). (1997). *Systems of innovation: technologies, institutions and organizations*. London: Printer.
Etzkowitz, H. (2003). Innovation in innovation: the triple helix of university-industry-government relations. *Social Science Information, 42*(3), 293–337.
Finnish Ministry of Education, & Finnish Ministry of Employment and the Economy. (2009). Evaluation of the Finnish national innovation system: policy report. Helsinki: Taloustieto Oy.
Godin, B., & Gingras, Y. (2000). The place of universities in the system of knowledge production. *Research Policy, 29*(2), 273–278.
Kumaresan, N., & Miyazaki, K. (1999). An integrated network approach to systems of innovation--the case of robotics in Japan. *Research Policy, 28*(6), 563-585.
Lundvall, B.-Å. (1992). *National systems of innovation : towards a theory of innovation and interactive learning*. London, New York: Pinter Publishers.
Mowery, D. C., & Sampat, B. N. (2004). Universities in National Innovation Systems. In J. Fagerberg, D. C. Mowery & R. R. Nelson (Eds.), *The Oxford handbook of innovation* (pp. 209-239). Oxford and New York: Oxford University Press.
Nelson, R. (1993). *National systems of innovation: a comparative study*. Oxford: Oxford University Press.
OECD. (1999). Managing National Innovation Systems. Paris: OECD.
OECD. (2007). OECD review of innovation policy: China (Synthesis reprot). Paris: OECD.
State Council. (2006). National Medium- and Long-Term Program for Science and Technology Development (2006-2020).

Theoretical insights and emerging practices

Chapter 1

Trans-nationalizing innovation systems – New spatio-cognitive spaces and the role of higher education institutions

Mika Kautonen & Mika Raunio

Introduction

Innovation activities are concentrated to a relatively small number of locations around the globe and this tendency may remain although some of the strong present-day locations may change to some new ones as a part of the ever on-going change in the global division of labour. What has rarely been studied so far are the linkages, institutions and interconnectedness between these locations of intense innovation activities which cross the national borderlines and reach in many cases to other continents facilitated by foreign direct investments, collaborative networks or mobility of educated and entrepreneurial people. Even less than empirical studies there are contributions to conceptual and methodological aspects on this phenomenon we refer to as trans-nationalizing innovation systems. This broad issue is our interest in this paper, with the focus on the role played by higher education institutions.

This phenomenon was anticipated by Freeman (2002) who stated that the *national* level was the major arena for processes of forging ahead, catch-up and falling behind during the 19th and the 20th centuries. During the 21st century this may change due to an increasing capacity to use information and communication technology as well as to exploit the highly developed transport connections. Competitive power will increasingly depend on the capability to manage international networks in production and marketing, with the core activities of research, design and development of software and hardware. These networks are dependent on a variety

of information services and knowledge-based activities, but as they are embedded in social systems, political and cultural changes may then take precedence in the complex interactions between the various sub-systems of society at all levels of the global system. (ibid. 2002, 209–210.) For innovation activities, this means that the various institutional preconditions has to be at place, be these cognitive, regulative, normative or financial, among other key factors. The national innovation system approach (e.g. Lundvall 1992, Lundvall et al. 2010, Edquist 1997) and its variants, e.g. regional and sectoral approaches (Cooke 2004, Malerba 2002) are developed to encompass such a variety of factors. Nevertheless, the approach has its limitations what comes especially to its spatial dimension.

This chapter will first discuss some key concepts that are necessary to make sense in analysing and measuring globalization of innovation. In this context, some theoretical categorization is been presented (section 2). This categorization is then deployed in the analysis of statistical data (section 3). Section use secondary data and shortly pin points the directions of change, and transformation of innovation processes and systems to *less national*. The findings indicate, among other things, that the process of trans-nationalization of innovation is more relevant in the context of such countries that can be characterized as small economies whereas the larger economies are yet less inclined to rely on external linkages (at least on average at a national level). It also seems evident that the regional level (or labour market area) would be a more appropriate spatial level of analysis than national. After preparing the grounds for the arguments, we move (in section 4) to discuss its key point, the dynamics of trans-nationalizing process involving knowledge-intensive and innovation-driven geographical agglomerations that connects and builds interdependence between them. Innovation systems, then, co-evolve with these processes by their diverse formal and informal institutions and organizational settings.

We briefly outline the emerging framework aimed to capture the essence of the drivers, formation and impacts of trans-nationalizing innovation systems by introducing a heuristic twin concept of *"trans-national channel"* and *"local platform"*. The illustrative example from higher education institution (HEI) point of view is Songdo International Campus from South Korea. It is used to illustrate the approach as such, but also to emphasis the significant role of HEIs in governance of trans-nationalizing innovation systems. While many forces tend to weaken the systemic nature of relations of different actors, HEIs may have a contrary role. National educational systems were not just sources of knowledge production in national innovation systems, but also important sources of social capital and mutual understanding – common cognitive mind-sets – among the actors of innovation systems. This role may be acquired by HEIs, when building the cognitive proximity among the actors who originates and operates in different countries

and even continents, when interactions are challenged not just by the spatial distance but often even more so by the cognitive distance. This may be seen as an important goal, when building and governing mutually beneficial long-term trans-national innovation systems between the innovative regions, in search of productive order to fragmentation process driven by globalization. Finally, a short conclusive section follows (5).

From national to trans-national

Fine-tuning spatial processes and concepts

As our focus in this chapter is most of the time not that of nation-states and national innovation systems, it is important to clarify some of the key concepts. First, Figure 1 illustrates the key elements of a national innovation system and further indicates some processes of trans-nationalization.

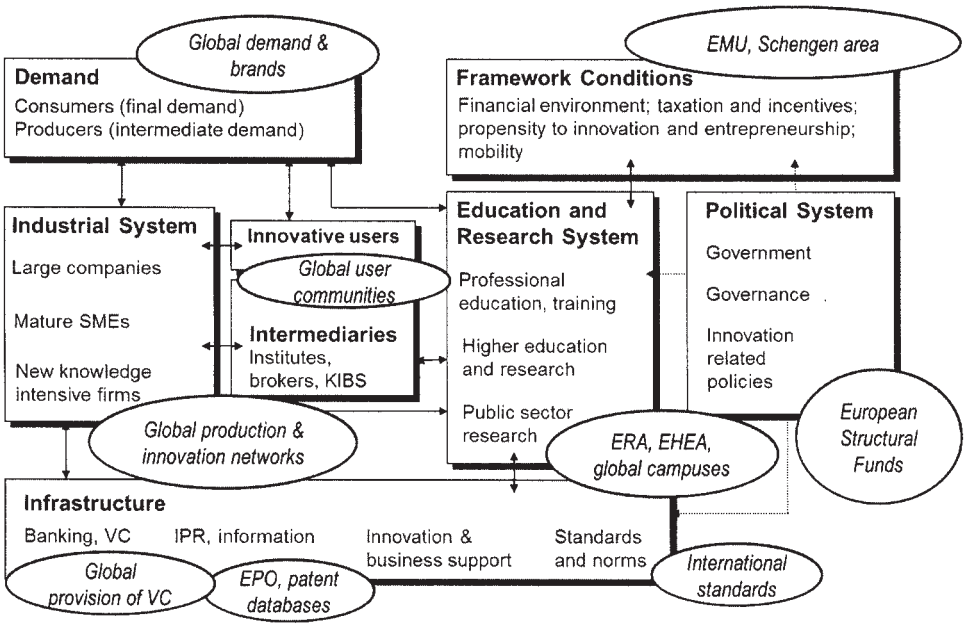


Figure 1. Elements of a national innovation system (rectangles) and examples of trans-nationalization (ellipses); (modified from den Hertog 2000, Smits & Kuhlman 2004.) Abbreviations: EMU=European Monetary Union; ERA=European Research Area; EHEA=European Higher Education Area; EPO=European Patent Office.

Portes (2001) bases his definitions of cross-border organizational structures and activities on type of actors and sources and scales of activity. Modifying his definitions, the following are used here:

- **Trans-national**[1] in this context comprise two concepts of Portes' (ibid.) – multinational and trans-national – as the main point is to distinguish the activities that are clearly based on the activities of governmental actors of a nation state from those who have no strong spatial obligations for their activities. Both individuals and firms are usually connected with their local environment with multiple ties and bonds, but they nevertheless have opportunities to conduct their innovation-related actions and attempt to steer the possible output to any location that seems to fit them optimally. Difference is that a nation state or any other geographically defined regional authority does not have this opportunity but their goals mostly have to be confined to this certain spatially defined area. Trans-national is not totally free from the spatial bonds, but in that context significant and long-term interactions are conducted mostly between the limited amount of locations rather than everywhere, globally.

- **International** is then very similar concept with Portes (2001); i.e. agreements and activities between nation states (e.g. national governments, regional development agencies). In the case of innovation activities, this refers to policies that aim to enhance the performance of the national innovation systems with activities and agreements crossing the national borders. Whereas trans-national activities *transcends* the nation states and its spatial limits, international activities take place and are organized between them specifically to foster innovativeness of those national economies.

- **Globalization** is a more macro-level concept that refers to the overall interconnectedness of the economy and economic agents. Key agents are forums and institutional bodies, mostly created by national governments, which are able to make global (e.g. United Nations, World Bank) or supra-national (OECD, European Union) agreements that have impact over all or many nation states.

Thus, innovation-related interaction and activities that take place at micro-level between the private agents (firms and individuals) crossing the national borders may be seen as *trans-national activities*. They are not global in terms of multiple interconnections but rather build connections between two or limited number of agents (and regions) in most cases. Multinationals fit with this logic and behind the emergence of concept of trans-nationalism was actually the growing importance of multinational corporations (MNCs) in 1980s (see Vertovec 2009).

Measuring innovation in trans-national settings

There are not many datasets and sources related to the trans-nationalization of innovation and of innovation systems. Table 1 presents the most common statistical data available. These relate to Research and Development (R&D), patenting, Intellectual Property Rights (IPR; as Technology balance of payments) and migration of the highly skilled people. The table also briefly comments the quality and relevance of such a data in measurement.

Even at the national level the measurement of innovation includes several shortcomings. Three most common areas of measurement have their problems[2] to mention just a few of them: 1) R&D expenditures measure the input rather than the output (innovations); 2) Patent data includes those inventions that are new and worth patenting but nevertheless they may never turn out to be innovations if they are not introduced in the market as is often the case; 3) Innovation surveys may be partly subjective and lack time-series and international comparability. As these problems indicate, there is a lot of work to do especially at the international to produce more accurate data and indicators to understand innovation activities and its complex relations to many underlying social processes and institutional underpinnings and dependencies. Further, this all clearly points out that also qualitative data is much needed to increase the understanding of the phenomenon.

Table 1. Data on trans-nationalization of innovation (modified* from Smith 2010, 77)

Indicator	Definition	Data availability	Quality and relevance
R&D flows	BERD (Business Expenditure on R&D) investments by firms domiciled elsewhere	Questionable	'Arms-length' indicator of knowledge flows
R&D by affiliates	BERD by foreign-owned affiliates	Good	Highly relevant for interdependence
Patents by location of applicant	Patents by foreigners in domestic patent offices, or by domestic patent holders abroad	Excellent	Measure of invention; patents often unused
Technology balance of payments	Royalty payments and payments for patent licences	Poor	Relevant but limited by data quality
Migration, especially of the highly skilled	Cross-border movements of highly qualified people	Poor	Strongly relevant, with some signs of improvement in data quality

*Note: those indicators mentioned by Smith are omitted here that are not necessarily directly related to innovation activities (commodity trade, trade in services, foreign direct investment, foreign portfolio investment)

Taxonomy on cross-border innovation activities

Despite of the many problems of measuring, recent years have witnessed much progress. Archibugi and his collaborators (e.g. Archibugi and Mitchie 1995, Archibugi et al. 1999, Archibugi and Iammarino 2002) have proposed a useful taxonomy on technological development and innovation activities that have a cross-border nature (see below the list of categories). Nevertheless, they have also found that the conceptual categories they have developed do not match well with the statistical indicators (Archibugi and Iammarino 2002, 105).

Recent ideas in innovation debate, such as open innovation, inclusive innovation economy, employee-driven or democratizing innovation and growing importance of labour markets (Lundvall & Lorenz 2010, Chesbrough 2003, von Hippel 2005), suggest that virtually all employees and individuals are potential contributors in innovation processes. Thus the perspective on innovation activities has broadened to cover many actors, individuals and organizations outside of science-driven or R&D-related activities. In addition, emerging economies and some development countries have become important players in the global (innovation) economy and as such also as objects of innovation policy-making in most advanced economies. Therefore, also the taxonomy seems to need some modification as well (additions by the authors in italics):

International exploitation of nationally produced innovations

- By profit-seeking firms and individuals in a form of 1) exports of innovative goods, 2) cession of licenses and patents, 3) foreign production of innovative goods internally designed and developed
- By public and non-profit organizations as a transfer of good practices and social innovations (service models, operation practices, concepts, policies etc.). There are many these kinds of organizations that are interested in diffusing abroad their innovations that have proven some merit, in order to create partnerships with similar organizations in other countries or to attract new international clients and foreign direct investments, for example.
- Concerns the use by innovators to deploy their technological competences in markets (or other geographical entities) other than the domestic one
- The category is labeled 'international' in opposition to 'global' because innovations often preserve their own national identity, even when they are diffused and marketed in more than one country.

Global generation of innovations

- By multinational firms in a form of 1) R&D and innovative activities both in the home and the host countries, 2) acquisitions of existing R&D laboratories, 3) greenfield R&D investment in host countries
- By supranational organizations as a transfer of good practices and social innovations (service models, operation practices, concepts, policies etc.)
- By individuals and firms in a form of virtual development projects (Open Source Software, user communities etc.). Internet has provided a new platform for virtual cooperation over long distances and has helped to create communities of specialists.
- The focus is on innovation generated on a global scale, often by multinational enterprises (MNEs, see e.g. Ghoshal & Bartlett 1990). Innovations here are based on inputs from multiple locations in different countries and these innovations are conceived on a global scale from the moment they are generated.

Global techno-scientific collaborations

- By universities and public research centres with 1) joint scientific projects, 2) scientific exchanges or sabbatical years, 3) international flows of students. Academic world has always transmitted knowledge from one scholar to another within a trans-national setting. During the last decades, activities of higher education institutes (HEI) have enormously expanded as they not only conduct knowledge transfer activities to industry but are entrepreneurial themselves by, for example, setting up campuses to foreign countries.
- By national and multinational firms in a form of 1) joint ventures for specific innovative projects, 2) productive agreements with exchange of technical information and/or equipment. Recently technological collaborations have increased also within the private sector. These are joint ventures in which two or more firms aim at developing new knowledge and/or products together. These joint ventures are often driven by a necessity to reduce the costs and risks of innovation and to cope with its increasing complexity. More and more these joint ventures take place between firms located in different countries.

Trans-national innovation community-building

- By "scientific diasporas" and trans-national innovation-related networks (immigration powered social spaces, etc.).

- By global innovation communities, brain circulation and "trans-national bridge builders" (expat-networks / associations, etc.).
- These are not necessarily directed to create innovations but they may as "by-products" and they may have a potential to enable them in trans-national settings.
- The power these communities may have in terms of innovation is in their capability to overcome the cultural and cognitive distance that may be entailed in national borderlines or in lack of geographical proximity.

The groupings presented above hint that any fixed spatial categories (e.g. a nation or a region) may not be very accurate as innovation activities are getting increasingly global or trans-national. Instead, a complex web of heterogeneous innovation-related cognitive structures and spaces has emerged that occurs in various geographical configurations.

Some evidence on trans-nationalizing of innovation

In this section, we will take a brief look into some contours of development related to the trans-nationalization of innovation (and as such, reflected on innovation systems). We already pointed to the lack of relevant statistical data. Above we presented the taxonomy with four main categories of which we will study next two that are "International exploitation of nationally produced innovations" and "Global techno-scientific collaborations". The reason to leave out the other two is that, first, the multinational firms and their efforts to globally generate innovations[3] is quite extensively studied phenomenon and for that reason it is not in our key interests. Second, trans-national innovation community-building is just added by us among the categories originally presented by Archibugi and his collaborators (1995, 1999, 2002) and is very likely the most difficult one to study in terms of availability of statistical data. If data cannot directly prove the trans-national nature of the phenomenon, it evidently proves the decreasing role on national level.

Therefore we concentrate on the two categories where firms and organizations operate on a trans-national scale. This data is acquired from the OECD, mostly from the recent report "Measuring Innovation – A New Perspective" (2010), where a good deal of different perspectives has been combined to come up with a coherent picture of the recent developments at the international level. The following key points can be made, based on the statistical evidence:

- During the period of 1997–2008, ***international technology flows*** have steadily grown faster than the GDP in a majority of the OECD countries although in some large economies the growth has been only on a same level than the growth of the GDP.
- Out of 25 countries, in 14 (mostly smaller) countries it was reported that innovative firms have ***collaboration on innovation*** at least as much with foreign partners than with domestic partners (CIS-2006). There is also some other evidence that the countries most involved in this form of globalization are the smallest and the most technologically dynamic (c.f. Archibugi & Iammarino 2002, 111). This is to a great extent because of the limited size of their domestic market – a reason that has always induced firms to search for larger markets and especially so for products that require high investments (e.g. on R&D).
- Concerning ***co-operation on scientific articles*** during the last twenty years, an evident tendency was from single authorship to co-authorships but here international co-operation have not, although grown considerably, caught up domestic co-operation but the gap has remained the same. Here, too, it seems that the small countries are more open to international co-operation. Nevertheless, in a case of the highly cited top scientific articles, the likelihood to foreign co-authorship increases. Among these articles, the position of the US is overwhelming.
- Within the OECD countries, the average share of ***international students*** is seven per cent of all students on the tertiary level. English-speaking countries have a stronghold here as six countries belong to the top-seven countries in this sense.
  Concerning the geographical pattern of patent collaboration (co-invention), out of the total of 29 countries with the data, in ten countries foreign co-inventors are as usual for inventors than domestic co-inventors.

As the main outcomes of these findings, three things can be highlighted. First, the phenomenon of ***trans-nationalizing of innovation activities can be observed by all the indicators*** although with very versatile pace and with heterogeneous forms varying from country to country. Second, the phenomenon seems to be ***more typical or acute for many small countries including some of the most dynamic innovation economies*** (e.g. the Nordic countries and Switzerland). Nevertheless, small countries form a heterogeneous group as many small countries indicate the same inward-oriented tendency than the most of the large countries.

Large countries thus tend to be usually somewhat inward-oriented in their innovation collaboration patterns measured on an overall national level. However, this kind of observations may be grossly misleading because in many large countries, regional patterns of development may differ greatly especially in terms of innovation activities. Examples of this are the USA with its well-known Silicon Valley and some

other regions *vis-á-vis* many Mid-Western states or China with Beijing, Shanghai and Greater Delta River Region compared with its most western landlocked territories.

Therefore, third, ***spatial level of analysis has to go beyond and within the nation-state***. To recognize trans-nationalizing innovation systems, data from the regional, city-region or labor-market levels would be required. This is a challenge, because indicators of innovation are in general at their infancy rather than well-developed and easily available. The same can be said of international comparisons at the regional level, and further analyses of interdependence between the regional economies (consisting trans-national innovation systems).

Trans-nationalization of innovation systems in the CHAPS framework

Towards the interconnected regions of innovation?

Trans-nationalization of innovation activities is very place-specific phenomenon in a sense that innovation activities to a great extent concentrate on a limited number of locations around the globe. This notion can be traced back to the Marshallian concept of an industrial district of the 19th century English industrial cities. Later, scholars such as Porter (Porter & Sölvell 1998, 441) stated that "(f)irst, a large proportion of total world output of particular goods is produced in a limited number of highly concentrated regions. Second, firms in particular industries, or firms which are technologically or otherwise related, tend to collocate and form spatial clusters. Third, these both these phenomena tend to be persistent over time."

Recently, Florida (2005) has come up with an argument that "…our world is amazingly 'spiky'. In terms of both sheer economic horsepower and cutting-edge innovation, surprisingly few regions truly matter in today's global economy. What's more, the tallest peaks – the cities and regions that drive the world economy – are growing ever higher, while the valleys mostly languish." (Ibid., 48.) However, not the spikes themselves but the drivers, dynamics and impacts of interconnections and interdependence of different types of knowledge-intensive and innovation-driven cities and other agglomerations create the mechanisms that re-produce some spatio-cognitive glue to globally fragmented spaces.

In our work, we deploy the concepts of the innovation system (IS) approach because we are interested in the wider system of informal and formal institutions and organizational settings that nurture or hinder innovation activities emerging beyond

the national borders. At the same time, we consider that the IS approach is in the need of development: the national perspective still tends to focus on the nationally limited scale (see e.g. Lundvall et al. 2010), and the regional variant (see e.g. Cooke 2004) has often recognized the multilevel characteristics and interdependencies of innovation but has not yet provided much tools to grasp the phenomenon. Sectoral perspective (see e.g. Malerba 2002) is more interested in the industrial dynamics as such than the institutional and spatial conditions that enable or hinder these dynamics. So far there has been a lack of innovation system level analyses and theorization of globalization (Oinas 2000, Carlsson 2004), with an exception concerning the role of large multi-national or trans-national companies (MNCs or TNCs) and their R&D structures as vehicles of knowledge transfer between different national innovation systems.

So far, only few attempts have been made to cover this challenging field in broader terms, including also other kinds of flows and linkages and trying to contribute to analytical and methodological development as well. Among the exceptions there are contribution by Coe and Bunnell (2003) on transnational innovation networks and by Wixted (2010) on the external, often global networks of geographical clusters. Or as he puts it, "…at least one sub-field of the study of innovation systems should focus on a multi-spatial framework which facilitates analysis of how places are connected to one another". (ibid., ix.) On the firm level, concepts such as global pipeline by Owen-Smith & Powell (2004) and Bathelt et al. (2002) have recently been presented.

Cooke and Laurentis (2010) integrate issue of governance of regional innovation systems to internationalization in their conclusions drawn from the extensive international research project (Eurodite). They have developed a regional governance models (including "platform governance") emphasizing the need of "being open to the world for understanding, while applying the transferred knowledge to indigenous economic assets". There is a need to combine industrial and governance knowledge flows in a specific territory with international innovation system proximities. (Cooke & Laurentis 2010, 358.) In fact, several studies have conducted regional or national level analyses to pinpoint the benefits of spatial proximity and social capital based on the common history, mutual understanding and trust (Doloreux 2002, Maskell & Malmberg 1999).

While strong regionally interdependent regions are hard to find, there are some examples of cases where border crossing takes place in spatial proximity, i.e. between neighbouring countries (e.g. Lundqvist & Trippl 2011) and even more so at the cluster level (e.g. Health Axis Europe, UK/Belgium/Germany). In the following example, we focus on the more typical phenomenon that may be seen as the sectoral

level case but highly important element when building the systemic qualities of innovation processes in trans-national context. Here, international education can be conceived as a platform to enable governance of trans-nationalizing innovation systems with opportunities to reproduce the cognitive and relational proximity for fragmented global settings.

Re-building spatio-cognitive spaces through trans-nationalizing HEIs

For a more detailed discussion, we introduce a heuristic twin concept of *"trans-national channel"* and *"local platform"* in the context of illustrative examples. First, trans-national channel can be thought of as a "bridge" between two localities over which many types of "vehicles and cargos" are being transported (i.e. people and their skills, experience, ideas, R&D cooperation and inventions, innovations, IPR, innovation policy cooperation and good practices, and so forth). Local platform, then, is a "junction" from which these different vehicles find their way to their destinations. As mentioned, higher education institutions serve these both functions, and play important role in rebuilding of cognitive spaces for global environment. The most obvious example may be the Silicon Valley and connections with Asia, built often by those who came to study from China and India to the USA, and then set up a business and business relations between the continents. The understanding of Asian and American (business) cultures was an essential asset in this process (Saxenian 2006), i.e. building of new cognitive proximity between the distant places. Higher education system was obvious platform that enabled the vast interactions between the regions, and enhanced the economy especially in Taiwan and then in China.

The other, more recent and intentionally planned example is the Songdo Global University Campus (SGUC) in South Korea. Campus is a university complex of several foreign universities and part of the South Korean strategy to support its innovation economy, where about 80 per cent of the population enrolls to tertiary level education.

Construction of Songdo started in 2009 and the campus is just 20 kilometers from the capital Seoul. South Korea already has two foreign university campuses (Netherlands Shipping and Transport College Korea and the Friedrich-Alexander University of Germany) opened in 2008 and there are expectations for more establishments in the immediate future. Campus locates in Incheon Free Economic Zone (IFEZ), where there is an international industrial city, tax support, free economic activity, high-quality administrative services and good quality living environment that supports the relocation of the foreign university programs, staff and students.

To attract foreign universities, IFEZ authorities also provide, for example, support funds for preparation activities, complimentary faculty housing and funds at the early stage of activities. The aim is to create educational hub (like Dubai and Singapore). However, the concept is "a testing board" for many universities, which in addition to global economic downturn may cause delays in the process, but both local and central government work in order to solve these challenges. Also possible devaluing of new oversea programs or requirements of government to high share of foreign students may create challenges that hinder the development of this "channel".

In practice universities will grant their own degrees in this global campus, but there will be independent administration for the campus facilities. The aim is to attract at least ten universities to the campus with their "best academic programs". Eventually an aim is to have even 30 000 students. This would make campus as comprehensive as traditional universities. Universities planning (or already decided) to set up undergraduate programs in Global Campus includes North Carolina State University, George Mason University, The University of Southern California, University of New York at Stony Brook and Belgium's Ghent University. According to the director of educational affairs at the University of Ghent, offering courses in South Korea is important, because it is

> "of great strategic importance to have a foothold in a part of the world that is in full expansion and Ghent hopes to attract students from all over Korea and neighboring regions and to set up a close working relationship with IFEZ, the Ministry of Knowledge Economy, the University of Incheon and other academic and industrial partners." (Miller 2011.)

This comment well captures the idea of a trans-national channel and local platforms. The example of Songdo also indicates the magnitude of organizational and even institutional changes that are often required, when channels and platforms are properly built. An important question is how these students (mostly management, engineering, science, etc.) are connected with the innovation activities and in which location.

Connections between regions matter in this context only if they have some crucial impacts and therefore a local platform greatly matters. Focal questions include how these processes are or are not organized and governed at the system level and by which actors? To study this, the main content of flows (human capital, finance or ideas and technologies) and processes how to utilize these (adoption/learning) have to be recognized as well as modes of flows (fixed, co-operative, circulation or mobile). What they will be in case of Songdo, remain to be seen in the near future.

Another focal issue is the impact these flows and processes have on the regions in question. Are these mutually beneficial (e.g. providing complementarities) or more for the benefit to the other (e.g. shifting R&D employment from one place to the other). Therefore, several types of impacts can be recognized (e.g. establishing or ceasing innovation activities, complementing or decreasing innovation-related resources, renewing or creating lock-in of regional technological development paths and so forth. (Kautonen & Raunio 2010.) To be useful, twin concept of trans-national channel and local platform should be able to offer analytical insights to these questions.

Therefore, we may define that trans-national channel refers *to an institutionalization and governance of the flows, directly or indirectly supporting the innovation activities of a national or regional economy, a cluster or a group of firms*. A channel is usually not an outcome of any single intentional activity such as a government policy alone but emerges from activities of multiple actors that happen to operate and share interests between two innovating regions. From this point of view, to gain any deeper understanding of the phenomenon, also case of Songdo, should be placed to wider framework of channels and platforms, in order to define its role as a part of the trans-nationalizing innovation system of South Korea.

Channels often *emerge from initiative and activities of mixed combinations of actors,* such as firms, transnational entrepreneurs, intermediary organizations, universities or NGOs, governmental institutes or alike. Especially policy-based channels rather facilitate the activities of other types of actors than operate themselves. Channels may also partly consist of flows in which actors' intentions may be related to something else than to directly foster the innovativeness of an innovation system they are embedded into[4]. Concepts of platform and channel are often overlapping and interdependent but serve for different ends.

The main division of platforms may be done between the *utilizing platforms* where flows are received and used to support innovation, and *generating platforms* where flows are created and sent to the new location. Songdo as educational platform, for example, refers to latter. On the other hand, utilization refers to the importance of absorptive capacity (Cohen & Levinthal 1990) that also Songdo as a platform supports. While the channel refers to relational proximity which always includes interaction, the platform emphasizes also cognitive proximity, which refers to similarities in mind-sets and behavioral patterns. Platforms are needed to intermediate or "translate" the ideas and resources to fit with a novel environment[5]. For these activities, trans-nationalizing HEIs offer plenty of opportunities.

Conclusions

We have here, within a very limited realm of a chapter, discussed issues related to the measurement and data on globalizing innovation activities. This was followed by a scant analysis that indicates, among other things, the phenomenon of trans-nationalizing of innovation activities seems to proceed although with very versatile pace and with heterogeneous forms varying from country to country. Companies increasingly exploit internationally their domestically produced innovations by exporting innovative goods or by selling their intellectual property rights or by producing their innovative goods abroad.

It was also noted that the process of trans-nationalization of innovation is more relevant in the context of such countries that can be characterized as small economies whereas the larger economies are yet less inclined to rely on external linkages (at least as an average on a national level). It also seemed evident that the regional level (or labour market area) would be a more appropriate spatial level of analysis than national.

The chapter then moved to discuss its key points related to trans-nationalizing innovation systems and knowledge-intensive and innovation-driven geographical agglomerations. Evident outcome was, that as globalization proceeds, its fragmenting impact to national level systems of innovation is inevitable, and new forms of governance and cohesion building are needed to attempt to steer the innovative actions spatially. First, this was seen as building of connections and interdependence between the regional agglomerations, or at between clusters and key agents within the regions. Innovation systems, then, co-evolve with these processes by their diverse formal and informal institutions and organizational settings. The emerging CHAPS framework was used as a heuristic tool to capture the essence of the drivers, formation and impacts of trans-nationalizing innovation systems. Second, the role of internationalizing higher education institutions was interpreted from the viewpoint of social capital and common mind-set. HEIs potentially build cognitive proximity among the globalized actors that may work as important sources for trans-national social capital and cohesion, providing the groundings for long-term and mutually beneficial interactions over time and space.

Finally, and methodologically, the spatial level of analysis is highly significant in this context. To identify any processes and impacts of trans-nationalizing innovation systems, data from the regional, city-region or labor-market area level would be required. This is a challenge because of the fact that the indicators of innovation are in general at their infancy rather than well-developed and easily available, not to mention international comparisons at the regional level, and further analyses of interdependence between the innovation-driven geographical agglomerations around the globe.

References

Archibugi, D. & Iammarino, S. (2002). The globalization of technological innovation: definition and evidence, *Review of International Political Economy,* 9 (1), pp. 98–122.

Archibugi, S. & Michie, J. (1995). The globalization of technology: a new taxonomy. *Cambridge Journal of Economics,* 19 (1), pp. 121–140.

Archibugi, D. & Howells, J. & Michie, J. (1999). *Innovation policy in a global economy*. Cambridge; Cambridge University press.

Bathelt, H. & Malmberg, A. & Maskell, P. (2002). Clusters and Knowledge Local Buzz, Global Pipelines and the Process of Knowledge Creation. DRUID Working Papers 02-12, Copenhagen Business School/Aalborg University, Denmark.

Borras, S. (2004). System of innovation theory and the European Union. *Science and Public policy* 31 (6), pp. 425–433.

Carlsson, B. (2004). Internationalization of innovation system: a survey of the literature. *Research Policy*, 35, pp. 56–67.

Castells, M. (1996). *The information age: economy, society and culture* (*Volume 1). The rise of the network society*. London; Blackwell.

Castells, M. (1997). *The information age: economy, society and culture* (*Volume II). The power of Identity*. London; Blackwell.

Chesbrough, H. (2003). *Open Innovation: The New Imperative for Creating and Profiting from Tech-nology*. Boston: Harvard Business School Press.

Coe, N. M. & Bunnell, T. (2003). Spatializing knowledge communities: towards a conceptualisation of transnational innovation networks, *Global Networks* 3 (4), pp. 437–56.

Cohen, W. & Levinthal, D. (1990). Absorptive Capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35, pp. 128–152.

Cooke, P. & De Laurentis, C. (2010). *Trends and Drivers of the Knowledge Economy.* In: Cooke, P. & De Laurentis C. & MacNeill, S. & Collinge, C. (Eds.). *Platforms of Innovation: Dynamics of New Industrial Knowledge Flows.* Cheltenham; Edward Elgar, pp. 1–26.

Cooke, P. (2004). Introduction: Regional innovation systems – An evolutionary approach. In Cooke, P., Heidenreich, M. & Braczyk, H.-J. (Eds.): *Regional Innovation Systems* (2nd edition), London;. Routledge.

Den Hertog, P. (2000). Knowledge intensive business services as co-producers of innovation. *International Journal of Innovation Management,* 4, (4), pp. 491–528

Doloreux, D. (2002). What should we know about regional systems of innovation? *Technology in Society*, Vol. 24. pp. 243–263.

Edquist, C. (1997) *Systems of Innovation: Technologies, Institutions and Organizations*. London; Pinter Publishers.

Florida, R. (2005). The world is spiky. Globalization has changed the economic playing field, but hasn't leveled it. *The Atlantic Monthly*, October 2005.

Freeman, C. (2002). Continental, national and sub-national innovation systems – complementarity and economic growth. *Research Policy* 31, pp. 191–211.

Ghoshal, S.& Bartlett, C.A. (1990). The multinational corporation as an interorganizational network. *The Academy of Management Review*, 15 (4), pp. 603–625.

Hagel, J. & Brown, J.S. (2011). Talent spikes. The three stages of talent-spike development. *The Economist*, blog posted 7.2.2011, http://ideas.economist.com/blog/talent-spikes, downloaded 13.6.2011.

Von Hippel, E. (2005). *Democratizing Innovation.* Cambridge, Massachusetts; The MIT Press.
Kautonen, M. & Raunio, M. (2010). *Channels and platforms for innovation and competence building: An emergent research agenda of trans-national innovation systems*. Paper presented in "Globelics 8th International Conference. Making Innovation Work for Society: Linking, Leveraging and Learning" 1–3 November 2010, University of Malaya, Kuala Lumpur, Malaysia.
Lundvall, B-Å. (1992). *National Systems of Innovation: Towards a Theory of innovation and Interactive Learning.*: London; Pinter Publishers.
Lundvall, B-Å. & Joseph, K.J. & Chaminade, C. (2010). *Handbook of innovation systems and devel-oping countries: building domestic capabilities in a global setting*. London; Edward Elgar.
Lundvall, B-Å. & Lorenz, E. (2010) Accounting for Creativity in European Union: A multi-level analysis of individual competence, labour market structure and systems of life-long learning. *Cambridge Journal of Economics*, 34 (1), pp. 1–26.
Lundquist, K-J. & Trippl, M. (2011). *Policy options for constructing cross-border innovation systems*. Paper prepared for the 6th International Seminar on Regional Innovation Policies, Lund, Sweden, 13–14 October 2011 (Draft version).
Mairesse, J. & Mohnen, P. (2010). Using innovation survey for econometric analysis. In Hall, B.H & Rosenberg, N. (Eds.) *Handbook of the Economics of Innovation. Volume 2*. Amsterdam; North-Holland/Elsevier, pp.1084-1125.
Maskell, P. & Malmberg, A. (1999). Localised learning and industrial competitiveness, *Cambridge Journal of Economics*, 23 (2), pp. 167-185.
Malerba, F. (2002). Sectoral systems of innovation and production. *Research Policy*, 31 (2), pp. 247–264.
Miller, K. (2011). *South Korea: Global campus for foreign universities.* Downloaded 21.10.2011 from: www.universityworldnews.com, Issue 155.
OECD (2010). *Measuring Innovation – A New Perspective*. Paris; OECD..
Oinas, P. (2000). Distance and Learning: Does Proximity Matter? In Boekema, F., Morgan K., & Bakker, S. Rutten, R. (Eds.) *Knowledge, Innovations and Growth. The theory and practice of learning regions*. London; Edward Elgar, pp. 57-69.
Owen-Smith, J. & Powell, W.W. (2004). Knowledge networks as channels and conduits: the effects of spillovers in the Boston biotechnology community. *Organization Science*, 15, (1), pp. 5–21.
Porter, M.E. & Sölvell, Ö. (1998). The role of geography in the process of innovation and the sustainable competitive advantage of firms, in Chandler, A.D., Hagström, P. & Sölvell, Ö. (Eds.) *The dynamic firm. The role of technology, strategy, organization, and regions*. Oxford; Oxford University Press.
Portes, A. (2001). Introduction: the debates and significance of immigrant transnationalism. *Global Networks* 1 (3), pp. 181–193.
Smits, R. & Kuhlmann. S. (2004). The rise of systemic instruments in innovation policy. *The International Journal of Foresight and Innovation Policy*, 1(1/2), pp. 4–32.
Smith, K. (2010). Globalization and Innovation Systems: Policy Issues. In Smits, R.E., Kuhlman, S. & Saphira, P. (eds.) *The theory and practice of Innovation Policy. An International Research Handbook.* Cheltenham; Edward Elgar, pp.75–94.
Saxenian, A.L. (2006). *New Argonauts: Regional Advantage in a Global Economy*, Cambridge; Harvard University press.

Vertovec, S. (2009). *Transnationalism*. London; Routledge.
Wixted, B. (2010). *Innovation system frontiers: Cluster networks and global value*. Heidelberg; Springer.

1. Trans-national is rather trans-local or trans-regional in real-life, because it refers to actual interactions between the private actors (individuals, firms, organizations, etc.) that almost always take place between certain localities or regions rather than nation states. Nation states, however, create significant borders for this interaction, and thus also trans-national connotation is well grounded.
2. Following the idea of the OECD's Frascati Manual; Also bibliometric analysis is an important tool in knowledge-based economy (although it includes several shortcomings as well), yet measuring scientific work (output) rather than innovation. (Smith 2010, 154)
3. Nevertheless, we have to bear in mind that this is the category where probably the most extensive developments have so far taken place by the operations of multinational firms and foreign direct investments in terms of, for example, acquisitions of R&D laboratories and green-field investments on R&D facilities in host countries.
4. It should be noticed that whereas, for example, concept of a global pipeline (Bathelt et. al 2004) refers to intentional collaboration between two firms, we want to underline that in channel there is often a large number of connections between a group of heterogeneous actors and numerous flows of resources between interconnected innovation systems. In addition, there are typically also attempts to somehow govern these connections and flows because these are usually considered important and at least potential sources of competitiveness for regions or nations.
5. Including: human capital flows (e e.g. foreign experts, "argonauts" who move back and forth between two locations, expats, international and foreign students, co-operation and collaboration with international partners), corporate flows (financial flows, e.g. foreign direct investments, venture capital) and policy flows (policy models, best practices, and supporting political and economic views and indicators that aim to impact on the form and functions of innovation systems in certain countries).

Chapter 2

Entrepreneurial universities in global innovation ecology

Ari-Veikko Anttiroiko

Introduction

Universities are facing various challenges that affect the preconditions of their organisation and role in society. One of the most pervasive megatrends, globalisation, is a kind of overall framework as a 'last phase of modernisation' that transforms both the material and cognitive dimensions of our lives. Another equally important megatrend is informatisation, which relates to the acceleration of knowledge processes in which the role of digitisation has been decisive. The challenge to universities is to understand the nature and dynamics of on-going transformation and on the basis of such an understanding to respond to its two fundamental dimensions: global-local and real-virtual dialectics. One of the practical issues as a part of this agenda is to define the role of universities in global innovation networks and in a wider innovation ecosystem, as their relevance will increase due to globalisation and informatisation. At the intersection of these transformations two important aspects of development will emerge, which are likely to affect the prerequisites of the success of universities in the future: networking logic and innovation intensity.

There are already developments that foreshadow the university-level responses to the abovementioned changes. Many universities are becoming increasingly entrepreneurial in the sense that they strive for commercialising their research, attracting talent and students globally, establishing overseas affiliations and cam-

puses, and participating in alliances and innovation networks on a global scale. The preconditions for required strategic actions and positioning vary from one country to another, and from one university to another, which in the long run may increase not only specialisation among universities but also disparities between them. Clark (2001, 147), for example, has estimated that increase in entrepreneurial responses in academic life makes universities more individualised. Yet, at the same time we may assume that there will be some degree of convergence especially among research universities towards entrepreneurial university model due to the conditioning logic of global capitalism. There is no logical contradiction here, for it may be that the underlying capitalist logic increases certain kind of convergence especially among the top universities which according to rankings belong to the highest apex of global university hierarchy, whereas as a whole the higher education institutions are increasingly differentiating and diversifying their offerings to knowledge and education markets due to the requirements of the underlying logic of global capitalism. Depending of how the national contexts develop and how universities are treated within public policy frameworks in each context, such a development may lead to increased disparities and hypothetically even to a kind of educational Darwinism.

This chapter is based on a contextual analysis of university transformation, with special reference to the impact of globalisation and related pressure to position universities in global innovation ecology. The starting point is Castellsian analysis of informational economy and the process of globalisation. One practical response to the opportunities and challenges of this tensional field is expressed in the concept of entrepreneurial university. The main argument is that in order to remain attractive and maintain or expand their resource base in the global competitive arena, universities need to learn to take a strategic view of the preconditions for their transformations which go beyond local or national perspectives on this matter. While this concept provides a philosophical basis for reshaping universities and a range of practical tools they may utilise in improving their daily work, it also poses a huge management challenge, including such practical areas as organisation of innovation services, managing stakeholder relations, and making decisions on internationalisation strategies. Let us discuss next what these opportunities and challenges mean at the university level.

Changing global scene

Globalisation is a gradual macro-level structuration of world order which implies a development towards dynamic world-scale interdependency (cf. Robertson, 1990). In such a process real exchange and interactive relations and people's orientation bases become global and consequently boundary-eroding as they crumble institutional boundaries of territorial communities. This, in turn, is why globalisation is dramatically changing the context of institutions and communities, including higher education institutions.

New economy is inherently global. It emerged in the last three decades on a worldwide scale, a phenomenon which Castells (1999, 66, 92) characterises as both 'informational' and 'global' in order to identify its fundamental distinctive features and to emphasise their interrelationship. New economy is *'informational'* because of the critical role of the capacity of economic actors to generate, process and apply new knowledge to productivity and competitiveness, and it is *'global'* because the core activities of production, consumption and circulation and their components – capital, labour, raw materials, management, technology, markets etc. – are organised on a global scale. This development has several manifestations. Capital is managed around the clock in globally integrated financial markets. Labour markets are global in two ways: there is a growing segment of professionals and experts and managers which is genuinely global in nature, but more importantly, even more place-bound labour is basically a global resource. Science and technology are also organised in global flows, albeit in an asymmetrical structure – as expressed in the idea of spikiness of a flat borderless world (cf. Florida, 2005). Markets for goods and services are also increasingly globalised, meaning that strategic aim of firms is to sell wherever they can throughout the world, in which the facilitating role of information and communication technologies (ICTs) and new transportation technologies is crucial. Lastly, the management of production and distribution and the organisation of production process itself are also increasingly organised worldwide. (Castells, 1999, 93–96.)

It is generally held that globalisation increases efficiency in the utilisation of scarce resources by competition and the global division of labour. On the other hand, global competition also causes various side-effects and risks. Castells (1999) claims that the networks of instrumental exchanges selectively switch on and off individuals, groups, regions, and even countries, according to their relevance in fulfilling the goals processed in the networks dominated by multinational corporations. This leads to a fundamental social tension between universal instrumentalism guided by corporate interests and historically rooted identities of people and their communities.

Globalisation also has a profound impact on public policy and the governance of polities. According to Douglas (2002, 56–58), hyper-competition may reduce overall welfare in local communities, lead to oversupply of infrastructure and some services, increase the social and economic costs of relocation, and strengthen the tendency for resource-depleting developmentalism. Governments' preoccupation with attraction-oriented development policy may divert attention away from the social and environmental concerns of the local communities (Logan, 1999). Here the connection to the realities of universities is apparent. This challenge translates into the question whether the entrepreneurial university or even the corporate university is the future model for universities, or whether we are in the process of 'republicising' universities (Rhoades & Slaughter, 2004) or reinventing civic universities with a civic duty to engage public research universities with society at large on local, national and global scales, thereby linking the social and economic spheres (Goddard, 2009; Cherwitz, 2010).

To conclude, due to increased cross-boundary flows of resources universities have become more concerned with global development than they have ever been before. The internationalisation of universities is reaching new heights, its advanced phase associated usually with 'globalisation' (Bartell, 2003; Mok, 2007; Nokkala, 2007). In a way, in the age of globalisation our institutions of higher education are becoming *networked universities* – be their philosophical background in the idea of entrepreneurial university or that of civic university – their strategic task being to network globally and to adjust to or to counterbalance the pervasive global trends. They may do this by increasing their competitiveness and/or by trying to affect the overall context within which this competition takes place, the former representing a kind of adjustment strategy or competition strategy and the latter referring to a more socially oriented strategy based on institutional cooperation and solidarity. As it is difficult to change the rules of the game in the name of solidarity, equality or other progressive universal values, the primary focus at university level seems to be on adjustment to global conditions and seizing emerging opportunities, which tends to increase inter-university competition.

Universities in a global knowledge space

Universities have always been interlinked with their surrounding societies. One of the turning points in their development was the Industrial Revolution, which slo-

wly changed the role of the university in society. As a part of this process teaching also started to give way to specialised research, which occurred fairly late, in many European universities only after World War II. A natural continuation of this evolution was increasing discussion of the "third task" of universities, which assumes that universities bring about direct positive changes to society besides teaching and research. An approach that radicalises this development is the view of university as entrepreneurial, capable of commercialising its research and less dependent on government in both regulatory terms and resource-wise.

Such a trend can be seen as a result of neo-liberal policy, even if we may also seek explanation from the hard facts of the post-war period of reduced government support for universities, to which universities have responded by increasing external funding, setting up collaborative research projects and developing innovative working methods. It is also important to keep in mind that in many research areas connected with economic growth sectors and industries – such as information and communication technology, biotechnology and green technology – new opportunities arose in the form of private funding and university-business collaboration (Leslie et al., 2001, 270). Furthermore, due to various trends in business the relationship of enterprises with universities has changed. Originally business investments in universities were more or less philanthropic donations and occasional inputs on basic research. As corporations started to close down or reduce their own R&D units as a part of their cost-reduction schemes, they began to see universities with new eyes. The basic idea was to achieve efficiency gains by contracting out R&D activities to universities, thus introducing unequivocally commercial interests into university-business collaboration (Nelsen, 2001; see also Powers & McDougall, 2005, 296). Thus, universities did not change only through their internal processes or in relation to the sponsoring government, but also due to changes in business with its new expectations and opportunities.

A new dimension to the discussion of the role of universities emerged when they started to internationalise their activities in the form of international conferences, student exchange, and academic exchange and collaboration programmes. Due to the intensification of such relations and activities on a global scale, it is nowadays referred to as 'globalisation', as mentioned earlier (e.g. Nokkala, 2007). There are plenty of manifestations of this trend. The economy is increasingly global as are also research systems. This is why the concept of "stand-alone university" makes less and less sense. Universities, just like most other institutions, must find their role in the networks of global production of knowledge and of research and innovation. There are global research networks in the making in different fields of research, and the fundamental competition between universities concerns their place especially in world-class 'university clubs'. In this process the Internet is crucial, for it helps to

disseminate the results and achievements of research groups as well as to communicate and collaborate with others irrespective of time and place. (Castells, 2009.) Even if focus in such globally oriented processes are predominantly on education business and various forms of academic collaboration, innovations are entering into the field of internationalised activities too. This is not a surprise due to the reasons described above. Even if universities' role in global innovation networks is still somewhat vague, such connections are in the making in different parts of the world (Mok, 2007).

One example of this development is the Nordic consortiums' government-university-business or Triple Helix collaboration in knowledge, innovation and business in China and India, which has assumed such institutional forms as the Nordic Centre at Fudan University, Shanghai (http://www.nordiccentre.org/) and the Nordic Centre in India with a liaison office in Delhi (http://www.nci.uu.se/). (Delman & Madsen, 2007). Another trend is expansion to overseas campuses, which has seen a rapid increase during the 2000s. The USA and other Anglophone countries, most notably Australia and the UK, have been most active in establishing overseas branch campuses in developing countries. Yet, the picture is changing slowly as the growth has also occurred on the North-to-North and even the South-to-South axis (Maslen, 2009). Such a process can be interpreted as the selling of the brand value of Western universities with good reputation to the growing Asian markets for higher education (see e.g. Green & Koch, 2009). In order to get their share of such a global boom in higher education business, universities may either rely predominantly on attraction strategy, i.e. attracting students and talent to host country campus, or, as is in the case of internationally-oriented entrepreneurial universities, to supplement this by designing and delivering offerings to growing target markets and by establishing overseas programmes, partnerships, affiliations or even branch campuses, such as Malaysia Campus of the University of Nottingham in Kuala Lumpur, Malaysia. Which ever strategy is chosen – that is, more host-country campus-centred or more internationalised and outward oriented strategy – in both cases the key to the organisational response to such an emerging logic is networking, as it is the main prerequisite for achieving the benefits from collaborative synergy and internationally recognised university brands.

Globalisation of universities is not restricted to attracting students and increasing business tailored to the growing higher education markets. An important dimension of this development is research and innovation, which bring global innovation networks into the picture. Let us discuss briefly the constitutive elements behind this trend. First, as mentioned above, globalisation and informatisation change the premises of academic life just the same way they do with other areas of social life. Second, networking is the fundamental principle of organisation in the global infor-

mation age, as it provides most efficient, flexible and durable form of organisation in technologically developed and increasingly interconnected multi-polar world (Castells 1999; 2000). Third, innovation is becoming the key to economic growth and competitiveness in knowledge-based global economy. Innovation is of special interest of post-industrial countries which cannot compete with low production costs, but rather with novelty of ideas, technological sophistication, and 'systemic' innovations. Universities as institutions of knowledge are inherently involved in national and regional innovation systems, which creates a connection to the very fundamental aspects of knowledge-based economy. The fourth part of this picture is the need of expanding and developing service sector in post-industrial societies, which relates among other things to higher education and research and the chance to 'productise' their output as high value adding services and, where possible, as profitable business. Thus, universities find themselves in the intersection of globalisation as a conditioning factor of interdependence, networking as the key principle of organisation of our time, innovation as the core of the competitiveness and smart growth in knowledge-based economy, and service transformation or 'servitisation' in the broad sense of the word as the fundamental service sector-related trend in post-industrial economies. Especially, if the role of networks is in the global world as critical as hypothesised by Castells (1999; 2004a; 2004b), universities will simply weaken as institutions in the global arena unless they organise their activities increasingly through networks, which at their highest level revolve around clubs of prestigious, high-performing and innovative universities and create connections to both global business and national and international institutions.

In the next sections I will take a look at a particular academic manifestation of the previously described globalisation trend, that of entrepreneurial university. *Entrepreneurial university* is more than anything an approach that connects the university with business and value networks and also makes the university a more business-like organisation, which links it with marketisation and competition trends (Nokkala, 2007, 63). It carries a potential to reshape the universities and to help them to find their place in the global innovation ecology. Yet, by the same token they carry a seed of social conflict or tension as entrepreneurial university may also develop towards business-type enterprise or office hotel of academic entrepreneurs in which the production of knowledge is conditioned by market logic and directed according to short-term business interests to growing higher education markets. This may create, in its extreme, a new form of knowledge-based exploitation or even educational Darwinism with limited interest in basic research, in objective analysis, in emancipatory tendency, and in social implications of science. As there are various

ways of understanding the idea of entrepreneurial university, we may assume that the picture is far from black-and-white, though.

Entrepreneurial university

Development towards academic entrepreneurship paradigm is manifested in discussions about entrepreneurial university (Clark, 2001), entrepreneurial science (Johnston & Edwards, 1987; Etzkowitz, 1998) and academic entrepreneurship (Shane, 2004). Slightly similar concepts include such as innovative university (Resnick & Scott, 2004) and more critically oriented conception of academic capitalism (Slaughter & Leslie, 1997; 2001). Let us take a close look at the entrepreneurial turn in higher education and the dispute over its desirability.

A universal model for universities in the making?

There seems to be a factual development towards entrepreneurial activities, and the commercialisation of university research is a widely used practice in most universities throughout the world (e.g. Bubela & Caulfield, 2010; Drabenstott, 2008; Huggins et al., 2008; O'Shea et al., 2007; Wong et al., 2007; Rasmussen et al., 2006; Jacob et al., 2003; Vickers et al., 2001; Chrisman et al., 1995). In some disciplines, such as electronics, the commercialisation of university research has a statistically positive connection with the start-up of new companies (Bania et al., 1993). In addition, in many disciplines good relationships with business have even boosted the academic careers of the academics involved (Powers & McDougall, 2005, 305).

There are also claims that the involvement of academic units in commercialisation has been misunderstood – including its ethical dimensions. Even if in the 1970s and 1980s such activities were deemed unethical, pioneering projects, for example within the University of California system, were not torpedoed by a unified opposition. The case of Ivor Royston at the University of California, San Diego, who actively participated and gained equity interests in biotech ventures indicates that *"the commercialization of the life sciences played out on a complex moral landscape, one in which organizational imperatives and individual passions and interests, as well as personal and institutional efforts to uphold traditional ideals, shaped events and determined outcomes."* (Jones, 2009, 844).

Van Looy and others (2004) have ended up claiming that entrepreneurship and academic work are not mutually injurious. Besides, even if the resource dependency view is important in general, finance from business does not make the university, especially at the department level, as dependent on private interests as is usually thought, due to professional ethics and the responsibility of academics to deliver good teaching. Etzkowitz (2003b) has even described research teams as quasi-firms, which do not have direct profit-making motive but operate in any case as firm-like entities. When the number of researchers in the team increases to the level of seven or eight, professors who are leading the group tend to do less research and devote more of their time to managerial tasks, as if they were running a small business. In all, changes in the everyday life of universities are not necessarily as radical as one might assume in light of the apparent trends towards increased dependency on resources provided by the private sector (Leslie et al., 2001, 269–270; see also Van Looy et al., 2004).

Critical interrogations

The transformation towards entrepreneurial university is far from a self-fulfilling prophesy. Many basic aspects of entrepreneurial university – the role of universities in local or regional development, commercialisation activities, the sustainability of technology transfer offices and the dynamism of entrepreneurial university departments – have been challenged on various grounds.

Regarding regional development, Lester (2007) and his research group came to the conclusion that the roles of universities vary considerably depending on the special features of the region, i.e. the technology transfer model is not in every case the best way of seeing the 'third task' of the university. More importantly, the impact of the university on regional development takes place in the form of education, on the one hand, and on the other of the provision of discussion forums on technological and social trends. In addition, the utilisation of academic research requires the use of means that are selective and tailored to the innovation needs of the region, which is why it is difficult to provide any generic model for the role of the university as a promoter of regional development (Hussler et al., 2010).

In addition, it is worth remembering that the results of knowledge and technology transfer have often remained modest. For example, instead of genuine entrepreneurship and spin-offs, academic entrepreneurial behaviour is usually channelled to 'softer' activities, such as consultancy and commissioned research. (Klofsten & Jones-Evans, 2000; cf. Philpott et al., 2011; Fini et al., 2010.) Cohen and others

(2003) have shown that as a form of knowledge transfer publications, conferences and informal meetings are much more important than, let's say, patents. Moreover, a large part of the entrepreneurial activities set up by academics take place outside the system of technology transfer and immaterial rights managed by the university (Fini et al., 2010). Abrams and others (2009) on the basis of the statistical analysis of American universities observed that only some 1/6 of technology programmes are self-supporting, which casts a shadow over technology transfer offices (on results pointing in the same direction see also Bubela & Caulfield, 2010). Nelsen (2001) concluded even more incisively that the best way of gaining significant income through technology licensing is simply to be lucky!

In their study Tuunainen and Knuuttila (2006) came to the conclusion that commercialisation, while infiltrating the universities creates contradictions and tensions, which reflect the fundamental differences between academia and business. Such a contradiction is reflected in the relationship between disciplines and the everyday life of academic work communities (see for example Ylijoki, 2003; cf. Bercovitz & Feldman, 2008; Leslie et al., 2001; Philpott et al., 2011, 7). Researchers have also identified various obstacles that at least delay the diffusion of entrepreneurial thinking to universities. Tuunainen and Knuuttila have also challenged the one-dimensional view that entrepreneurial university is some kind of inevitable trend that casts all universities in the same mould (cf. Philpott et al., 2011).

Approaches to the dualism thesis

The *critical HEI paradigm* seems to rest to a large extent on a kind of dualism thesis, which emphasises the special nature of academic research and, consequently, the fundamental difference between academic life and business. On this basis there have been claims that universities should strengthen their public role and try to secure public funding for their activities (Rhoades & Slaughter 2004). An opposite view, which could be called the *academic entrepreneurship paradigm*, views the entire situation differently. The entrepreneurial paradigm, however, has many manifestations, which vary in terms of their stance towards the dualism thesis. The idea of an entrepreneurial university which emphasises non-commercial dimensions and transformational capacity builds a bridge between critical and entrepreneurial approaches (Clark, 2001), whereas the more entrepreneurially-oriented Triple Helix model and the similarly entrepreneurially oriented conceptions emphasise the new roles of universities, the positive impacts of commercialisation, and also the governability of the hybrid forms that emanate from such a development (Etzkowitz, 1998; 2003a; Etzkowitz et al., 2000). A kind

of extreme form of this approach in the academic context is a university concept in which technology transfer, commercialisation and sponsorships are an integral part of the philosophy and practice of the university (Cf. Smilor & Matthews, 2004). Stanford University, for example, has been often used as a representative example of such an orientation. Even if in theorisations of entrepreneurial universities it is usually noted that entrepreneurship is not meant to lead to a narrow-minded idea of 'commercialised' university (e.g. Clark, 2001; Etzkowitz, 2003a, 333), capitalising on knowledge is a natural dimension of their operating principles and practices.

When this trend is taken to its extreme, we end up with the idea of a *corporate university*, which challenges the very idea of public university. Corporate universities are usually educational or training units of large corporations, which provide company-specific training. They flourished especially in the USA, where there is no official definition in law of the term 'university'. One of the best known corporate universities is the Hamburger University operated by McDonald's Corporation in Chicago. (See Schultz, 2005). Corporate universities emerged in the 20th century as a continuation of a workforce education trend that saw the light of day as early as around the 1910s. Instead of coping with the perceived slowness and irrelevance of theoretical learning found in traditional universities, business and industry turned inward and created their own training and development departments. These business units were designed to provide employees with the skills necessary to perform their duties with precision and efficiency. In spite of the variations in the explicit mission of corporate universities, most of them are founded on strategic business practices and an awareness of their responsibility to contribute to the effectiveness and growth of the company they serve. Corporate universities are strategic in that they exist to fulfil the organisation's mission. They are results-oriented because they survive only as long as they can prove their value back to the organisation. (CUE, 2009.)

Besides the training units of large corporations, there are also universities and independent training companies that have created 'corporate university' type institutions. For example, the Dutch-based Network University (TNU) states that it facilitates innovative learning and capacity building for a global network of professionals, students, non-profit organisations, agencies and networks specialising in creating e-tools for education and networking in the field of development. TNU started as a project of the University of Amsterdam, but developed into a foundation which collaborates with various universities, development agencies, NGOs and international education and capacity building institutes. This cooperation has resulted in the development of various projects, such as online courses, workshops and debates, education and communication platforms, evaluations of e-learning initiatives and training seminars. (See the Web site of TNU at http://www.netuni.nl/tnu/moz/).

Office hotelling for the academic entrepreneurs?

An additional theoretical aspect to be discussed here is the level of analysis and the way individual, organisational, institutional and structural aspects are weighted in the analysis of the academic entrepreneurship. In this scene *critical HEI paradigm* associated with the theorisations of academic capitalism has a critical social theoretical background, and thus its point of departure is basically a structural analysis explaining how public research universities respond to neoliberal tendencies to treat higher education policy as a subset of economic policy (Slaughter & Leslie, 1997). However, more accurately its approach may be called multi-level analysis, the major focus being on departmental level and, as is the most usual case, on the level of faculty members and professional staff with a tendency to view academics as state-subsidised entrepreneurs (See Slaughter & Leslie, 2001). Leslie and others (2001, 269) conclude this discussion by stating that "the department or 'unit' level is the most interesting and is the most important to policy because this is where the production activities, the instruction, the research, and the service of the university, largely are produced." Nevertheless, analyses of academic capitalism apparently revolve largely around individuals – their time allocation, their external funding, their retirement plans – in different roles (Rhoades & Slaughter, 2004; Ylijoki, 2003).

In contrast to this, Clark (2001) in his groundbreaking theorisation pays more attention to capacity and institution-building. He provides a university-level perspective on creating new practices, seeking to innovate the ways of teaching, research and 'third task', and creating preconditions for high transformative capacity. It is the collective entrepreneurial action that makes the difference in Clark's theorising. His analysis of Warwick, Twente, Strathclyde and other universities point clearly the emphasis on the institutional dimension of entrepreneurialism. Clark's message is that universities cannot continue to live according to the premises of 'old autonomy' with full state support, teaching a few students, and engaging in limited basic research. As universities have to do more with less, which increases imbalance in the environment-university relationship, they simply need to become more entrepreneurial. It helps them to recover the autonomy and to better control their future. Entrepreneurial response is a formula for institutional development that puts academic autonomy on an increasingly self-defined basis by diversified income generation, reduced state-dependency, and the development of new units or spin-offs outside traditional departments (Clark, 2001, 146). His idea of 'collective entrepreneurship' is conceptually different from a narrowly defined, business-minded academic entrepreneurship (Clark, 2001, 148).

Expressions of more business-oriented entrepreneurial paradigm, in the form of Triple Helix or similar theorisations, are also institutional as they focus on new roles and institutional relationships of universities (Etzkowitz et al., 2000). Such

approaches are typically also fairly evolutionary, as shown by the analyses of the evolution of Triple Helix models and university-industry linkages, and descriptions of entrepreneurial university from transitional to full-fledged entrepreneurial university (Etzkowitz, 2003a).

What is interesting here is that focus on individual academics tends to be associated with critical analyses of academic entrepreneurship, whereas strong institutional and evolutionary emphasis is more common among proponents of moderate or extreme academic entrepreneurship paradigm. Reason for this seems to be that at the institutional level it is easier to show the "inevitable" transition towards entrepreneurial university. More importantly, these differences reflect variations in perceptions of universities and the role of research on transformation of HEIs, as more actor-oriented critical HEI paradigm tends to provide tools for critical self-understanding and empowerment among academics as well as for 'republicising' universities by reaffirming their public purpose and financing (Rhoades & Slaughter, 2004), when compared with institutionally oriented academic entrepreneurship, which is more concerned with institutional transformational capacity, management of complex inter-organisational linkages, and the building of new entrepreneurial culture (Clark, 2001; Etzkowitz et al., 2000).

The entrepreneurial university in global innovation ecology

Smilor and Matthews (2004) described the change of university paradigm in the American point of view such that whereas universities have traditionally been places in which dreams have flourished, new ideas are tested and the limits of our knowledge are extended, in the last twenty years we have witnessed the emergence of a new kind of thinking advocating commercialising such dreams. We are talking about entrepreneurial universities and the 'internal entrepreneurs' (or intrapreneurs) or state-supported entrepreneurs within them (Slaughter & Leslie, 2001), who engage in establishing spin-off firms and commercialising scientific research and utilise immaterial rights in the form of patents and technology licensing. Such a development has been the most apparent in the Anglo-American countries, in which there are world-class public and private universities, accumulated private capital and entrepreneurial culture. In practical terms there are three key elements that characterise an entrepreneurial university (Smilor & Matthews, 2004, pp. 114–115):

(1) the role of the university as the promoter of economic development,

(2) the organisation of technology transfer and commercialisation, and
(3) incentive and reward systems that support entrepreneurship.

One of the core activities of an entrepreneurial university is thus the organisation of commercialisation and innovation services (Litan et al., 2007). This is a paradigmatic way of generating income from the knowledge assets of universities, which especially at the highest level of global university hierarchy link them to global innovation ecology. Commercialisation is only one part of this activity field. Namely, often universities also organise science parks or incubators, as in the famous cases of Cambridge Science Park in the UK or Stanford Research Park in California. Many universities around the world have followed suit – especially high-performing universities in East and Southeast Asia (Mok, 2007; Castells, 2009; Anttiroiko, 2004). Beside such entrepreneurial activities, the same approach can be applied to teaching and research as well, as illustrated in Figure 1. This development indicates that emphasis is developing from Clark's groundbreaking analysis of transformational capacity of entrepreneurial universities towards more concrete value-adding activities, such as technology transfer, commercialisation, university marketing, research collaboration, and spin-off creation.

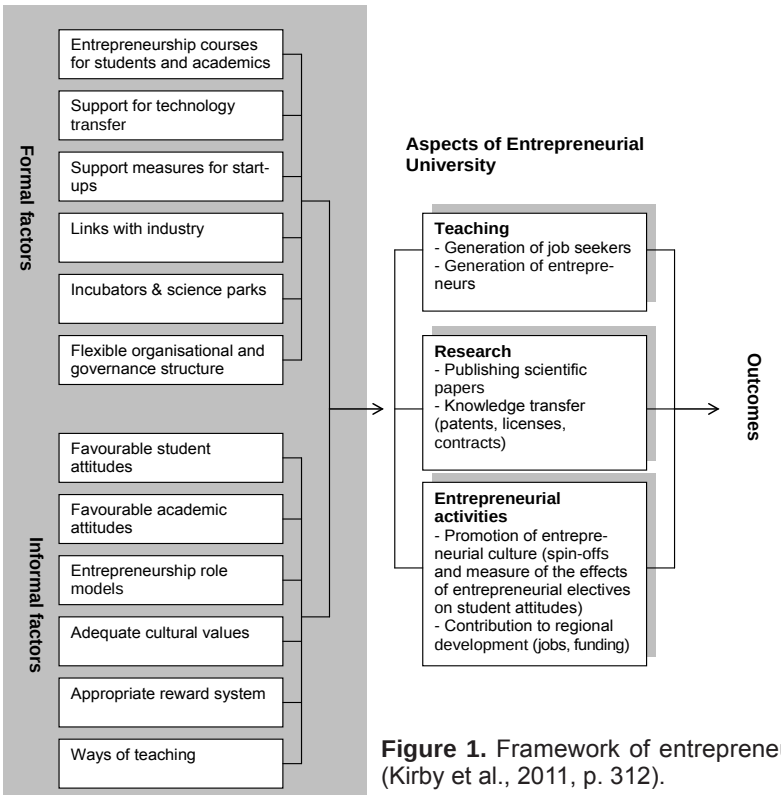


Figure 1. Framework of entrepreneurial university. (Kirby et al., 2011, p. 312).

Entrepreneurial universities are engaged with business and value creation in various ways. A new challenge arises from the globalisation of innovation. It assumes various forms, the three basic ones being: (1) international exploitation of nationally produced innovations, (2) global generation of innovations, and (3) global techno-scientific collaborations (Archibugi & Iammarino, 2002). Both export-oriented efforts and techno-scientific collaborations are important, but currently the most challenging aspect of the globalisation of innovation is 'global generation of innovations', which is usually organised as networks. Such global innovation networks (GINs) as a paradigmatic organisational form of global innovation ecosystem can be defined as *globally organised networks of interconnected and integrated functions and operations by firms and other organisations engaged in the development or diffusion of innovations* (Chaminade, 2009, 12; Plechero & Chaminade, 2010; Chaminade et al., 2010; Komninos, 2008; 2009; Komninos & Sefertzi, 2009). Universities' involvement in the global innovation networking can be divided into two slightly different kinds of network formations: (a) innovation-oriented global research networks or global university alliances, and (b) global innovation networks or multi-stakeholder partnerships which serve primarily business interests. Of course, there are also other forms of involvement in global innovation ecology, such as collaboration with multinational enterprises' R&D units, innovation oriented overseas branch units of universities, and participation in innovation forums and platforms organised by public or private intermediaries or public sector organisations.

There are a few alliances and networks which manifest the globalisation trend depicted above. Some of these are socially or academically, some more commercially oriented. An example of the former is the *Global U8 Consortium* set up by eight universities to meet the growing demand for cross-cultural education, to respond to new challenges posed by the need for global logistics, business models and advanced technologies, and to organise interdisciplinary activities by conducting joint research and expanding outreach programmes (Web site available at http://www.uri.edu/gu8/). Another to be mentioned here is the *Global Alliance of Technological Universities*, established in 2009 by seven top technological universities. It aims to address global societal issues to which science and technology could provide solutions. Such issues include biomedicine and health care, sustainability and global environmental change, security of energy, water and food supplies, and changing demographics (See the Web site available at http://www.globaltechalliance.org/).

An example of a more business-oriented network is *Global Venture Lab* (GVL), developed 2007–2009 by three professors: Prof. Dhrubes Biswas of the Indian Institute of Technology, Kharagpur, Prof. Marko Seppä of the University of Jyväskylä, and Prof. Ikhlaq Sidhu of the University of California, Berkeley. GVL is a

university-based business creation platform. It is, however, more a "method", than a place or organisation. At the heart of the GVL process is the integration of research, learning, and practice. The idea is to bring business closer to students and research closer to practitioners. The idea is that such an approach enhances the creation of innovative, responsible and sustainable enterprises. In November 2009, more than 20 universities worldwide joined to establish the GVL Network under the leadership of the Center for Entrepreneurship & Technology (CET), UC Berkeley (For further information, see http://cet.berkeley.edu/global-venture-lab-network-1).

Conclusion

Universities are institutions that reflect the trends and developments of their host regions and national contexts and increasingly also of the global context. The most pervasive trend in this respect is the emergence of a kind of academic capitalism, which poses challenges to the traditional 'ivory tower' culture of universities. Universities are increasingly expected to contribute to the development of society and their host regions or cities, which require more than anything the organisation of technology transfer, commercialisation and innovation services (Smilor & Matthews, 2004). Universities have responded to these challenges in various ways. The emphasis could, for example, be on the development of new teaching methods, setting up international student exchange programmes, organising innovation services, hosting international conferences, participating in global research networks, or establishing partnerships or international branch campuses.

One of the most important aspects of this development relates to universities' role in knowledge-based economy and innovation processes in particular. Universities are expected to contribute to innovation creation because innovation is the driver of the economy and the most important source of competitiveness in a global economy. This has been articulated in discussions on national and regional innovation systems as well as in Triple Helix theorisation.

There is a range of conceptions that reflect this change. In this chapter I have outlined one of them, entrepreneurial university, which can be seen as a response to abovementioned contextual challenges. The idea of entrepreneurial university has various expressions, which generally relate to the need to increase university's transformative capacity, to connect the university with business and innovation networks, and to make the university a more business-like organisation. What is essential in this conception is that it reshapes universities' relationships with stakeholders and

with society as a whole. From the point of view of critical HEI paradigm, such a turn is tensional and questionable, causing various socially harmful consequences, whereas academic entrepreneurship paradigm takes the opposite stance, seeing it as an inevitable turn in higher education. It seems that if universities are expected to reap the benefits from global innovation networks, they need to be entrepreneurial, at least to some extent. Yet, this does not have to be taken to the extreme, that is, to make commercialisation of knowledge universities' primary focus and faculty members entrepreneurs or at least 'intrapreneurs'. Participation in global innovation networks and interaction within global innovation ecology are complex settings, leaving room for both the fulfilment of universities' public role as well as their business-like operations.

References

Abrams, I., Leung, G., & Stevens, Ashley J. (2009). How are U.S. Technology Transfer Offices Tasked and Motivated – Is It All About the Money? *Research Management Review, 17*(1), 18-50.

Anttiroiko, A.-V. (2004). Editorial: Global competition of high-tech centres. International *Journal of Technology Management, 28*(3/4/5/6), 289–323.

Archibugi, D., & Iammarino, S. (2002). The globalization of technological innovation: definition and evidence. *Review of International Political Economy, 9*(1), 98–122.

Bania, N., Eberts, R.W., & Fogarty, M.S. (1993). Universities and the Startup of New Companies: Can We Generalize from Route 128 and Silicon Valley? *Review of Economics and Statistics, 75*(4), 761–766.

Bartell, M. (2003). Internationalization of universities: A university culture-based framework. *Higher Education, 45*, 43–70.

Bercovitz, J., & Feldman, M. (2008). Academic Entrepreneurs: Organizational Change at the Individual Level. *Organization Science, 19*(1), 69–89.

Bubela, T.M., & Caulfield, T. (2010). Role and reality: technology transfer at Canadian universities. *Trends in Biotechnology, 28*, 447–451.

Castells, M. (1999). *The Rise of the Network Society*. The Information Age. Economy, Society and Culture, Vol. I. Cambridge, MA; Oxford, UK: Blackwell.

Castells, M. (2000). Materials for an exploratory theory of the network society. *British Journal of Sociology, 51*(1), 5–24.

Castells, M. (2004a). Informationalism, networks, and the network society: a theoretical blueprint. In M. Castells (Ed.), *The Network Society: a cross-cultural perspective* (pp. 3- 45). Northampton, MA: Edward Elgar.

Castells, M. (2004b). Afterwords. Why networks matter? In H. McCarthy, P. Miller & P. Skidmore (Eds.), *Network Logic. Who governs in an interconnected world?* Demos Collection, issue 20, pp. 219-–25. London: Demos. Retrieved March 23, 2011, from http://www.demos.co.uk/files/networklogic.pdf

Castells, M. (2009). Transcript of a lecture on higher education. University of the Western Cape, 7 August 2009. Retrieved April 19, 2011, from http://chet.org.za/webfm_send/552

Chaminade, C. (2009). *On the concept of Global Innovation Networks and its use in INGINEUS*. CIRCLE electronic working paper, 2009/05. Sweden: Lund University.

Chaminade, C., Zabala, J.M., & Treccani, A. (2010). The Swedish national innovation system and its relevance for the emergence of global innovation networks. Working Paper No. 2010/09. CIRCLE. Sweden: Lund University. Retrieved July 12, 2011, from http://www.circle.lu.se/upload/CIRCLE/workingpapers/201009_Chaminade_Zabala_Treccani.pdf

Cherwitz, R. (2010). Viewpoint: The Challenge of Creating Engaged Public Research Universities. How to harness the vast intellectual assets of universities as a lever for social good? *Planning for Higher Education*, July-September 2010, 60-64. Retrieved July 12, 2011, from https://webspace.utexas.edu/cherwitz/www/articles/challenge.pdf

Chrisman, J.J., Hynes, T., & Fraser, S. (1995). Faculty entrepreneurship and economic development: the case of the University of Calgary. *Journal of Business Venturing, 10*, 267–281.

Clark, B.R. (2001). *Creating Entrepreneurial Universities. Organizational Pathways of Transformation*. First ed. 1998. 3rd impression. IAU Press. Pergamon.

Cohen, W.M., Nelson, R.R., & Walsh, J.P. (2003). Links and impacts: the influence of public research on industrial R&D. In A. Geuna, A.J. Salter & W.E. Steinmueller (Eds.), *Science and Innovation. Rethinking the Rationales for Funding and Governance* (pp. 109-146). Cheltenham, UK: Edward Elgar.

CUE (2009). What is a Corporate University? Alexandria, VA: Corporate University Enterprise, Inc. Retrieved July 12, 2011, from http://www.cuenterprise.com/777about/whatiscu.php

Delman, J. & Madsen, S.T. (2007). *Nordic triple helix Collaboration in Knowledge, Innovation, and Business in China and India: A preliminary study*. Copenhagen: NIAS-Nordic Institute of Asian Studies.

Douglass, M. (2002). From global intercity competition to cooperation for livable cities and economic resilience in Pacific Asia. *Environment & Urbanization, 14*(1), 53–68.

Drabenstott, M. (2008). Universities, Innovation and Regional Development: A View from the United States. *Higher Education Management and Policy, 20*(2), 43–55.

Etzkowitz, H. (1998). The norms of entrepreneurial science: cognitive effects of the new university-industry linkages. *Research Policy, 27*, 823–833.

Etzkowitz, H. (2003a). Innovation in innovation: the Triple Helix of university-industry-government relations. *Social Science Information, 42*(3), 293–337.

Etzkowitz, H. (2003b). Research groups as 'quasi-firms': the invention of the entrepreneurial university. *Research Policy, 32*, 109–121.

Etzkowitz, H., Webster, A., Gebhardt, C., Regina, B., & Terra, C. (2000). The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm. *Research Policy, 29*, 313–330.

Fini, R., Lacetera, N., & Shane, S. (2010). Inside or outside the IP system? Business creation in academia. *Research Policy, 39*, 1060–1069.

Florida, R. (2005). The World is Spiky. The Agenda. *The Atlantic Monthly,* October 2005, 48–51.

Goddard, J. (2009). Re-inventing the civic university. Provocation 12: September 2009. NESTA. Retrieved July 12, 2011, from http://www.nesta.org.uk/library/documents/Reinventing-Civic-Uni-v2.pdf

Green, M.F. (2005). *Measuring Internationalization at Research Universities*. Washington, D.C.: American Council on Education.

Green, M.F., & Koch, K. (2009). U.S. Branch Campuses Abroad. ACE Issue Brief. September 2009. *American Council on Education*. Retrieved May 8, 2012, from http://www.acenet.edu/Content/NavigationMenu/ProgramsServices/cii/pubs/ace/Cross-border_Survey_Results.pdf

Huggins, R., Jones, M., & Upton, S. (2008). Universities as drivers of knowledge-based regional development: a triple helix analysis of Wales. *International Journal of Innovation and Regional Development, 1*(1), 24–47.

Hussler, C., Piccard, F., & Tang, M.F. (2010). Taking the ivory from the tower to coat the economic world: regional strategies to make science useful. *Technovation, 30*, 508–518.

Jacob, M., Lundqvist, M., & Hellsmark, H. (2003). Entrepreneurial transformations in the Swedish university system: the case of Chalmers University of Technology. Research Policy, 32, 1555–1568.

Johnston, R.F., & Edwards, C.G. (1987). Entrepreneurial science. New links between corporations, universities, and governments. Westport, CT: Greenwood Publishing Group.

Jones, M.P. (2009). Entrepreneurial Science. The Rules of the Game. Social Studies of Science, 39(6), 821–851.

Kirby, D.A., Guerrero, M., & Urbano, D. (2011). Making Universities More Entrepreneurial: Development of a Model. *Canadian Journal of Administrative Sciences, 28*, 302–316.

Klofsten, M., & Jones-Evans, D. (2000). Comparing Academic Entrepreneurship in Europe – The Case of Sweden and Ireland. *Small Business Economics, 14*(4), 299–309.

Komninos N. (2008). Intelligent Cities and Globalisation of Innovation Networks. London and New York, Routledge.

Komninos, N. (2009). Intelligent cities: Towards interactive and global innovation environments, International Journal of Innovation and Regional Development, 1(4), 337–355.

Komninos, N. & Sefertzi, E. (2009). Intelligent Cities: R&D offshoring, web 2.0 product development and globalization of innovation systems. Paper presented at the Second Knowledge Cities Summit 2009, Shenzhen, China, 5–7 November 2009. Retrieved July 12, 2011, from http://www.urenio.org/wp-content/uploads/2008/11/Intelligent-Cities-Shenzhen-2009-Komninos-Sefertzi.pdf

Leslie, L.L., Oaxaca, R.L., & Rhoades, G. (2001). Technology Transfer and Academic Capitalism. In A.H. Teich, S.D. Nelson, C. McEnaney & S.J. Lita (Eds.), *AAAS Science and Technology Policy Yearbook* (pp. 261–277). Washington, D.C.: American Association for the Advancement of Science.

Lester, R. K. (2007). Universities, Innovation, and the Competitiveness of Local Economies: An Overview. In: R.K. Lester & M. Sotarauta (Eds.), *Innovation, Universities, and the Competitiveness of Regions* (pp. 9-30). Technology Review 214/2007. Helsinki: Tekes.

Litan, R.E., Mitchell, L., & Reedy, E.J. (2007). Commercializing University Innovations: A Better Way. NBER Working Paper. April 2007. Cambridge, MA: National Bureau of Economic Research. AEI-Brookings Joint Center for Regulatory Studies. Retrieved February 26, 2011, from http://www.brookings.edu/~/media/Files/rc/papers/2007/05_innovations_litan/05_innovations_litan.pdf

Logan, J.R. (1999). Competing for Urban Growth: Growth Coalitions around the Globe. *Futura, 18*(3), 64–75.

Maslen, G. (2009). GLOBAL: Huge expansion in overseas campuses. *University World News,* Issue 102, 22 November 2009. Retrieved September 1, 2011, from http://www.universityworldnews.com/article.php?story=20091120103411843

Mok, K.H. (2007). Questing for Internationalization of Universities in Asia: Critical Reflections. *Journal of Studies in International Education, 11*(3/4), 433–454.

Nelsen, L (2001). The Entrepreneurial University. In A.H. Teich, S.D. Nelson, C. McEnaney & S.J. Lita (Eds.), *AAAS Science and Technology Policy Yearbook* (pp. 279–285). Washington D.C.: American Association for the Advancement of Science.

Nokkala, T. (2007). *Constructing the Ideal University. The internationalisation of higher education in the competitive knowledge society.* Tampere: Tampere University Press.

O'Shea, R., Allen, T., Morse, K., O'Gorman, C., & Roche, F. (2007). Delineating the anatomy of an entrepreneurial university: the Massachusetts Institute of Technology experience. *R&D Management, 37*(1), 1–16.

Philpott, K., Dooley, L., O'Reilly, C., & Lupton, G. (2011). The entrepreneurial university: Examining the underlying academic tensions. *Technovation, 31*, 161–170.

Plechero, M., & Chaminade, C. (2010). *Different competences, different modes in the globalization of innovation? A comparative study of the Pune and Beijing regions*. CIRCLE electronic working paper, 2010/03. Sweden: Lund University.

Powers, J.B., & McDougall, P.P. (2005). University start-up formation and technology licensing with firms that go public: a resource-based view of academic entrepreneurship. *Journal of Business Venturing, 20*, 291–311.

Rasmussen, E., Moen, Ø., & Gulbrandsen, M. (2006). Initiatives to promote commercialization of university knowledge. *Technovation, 26*, 518–533.

Resnick, D.P., & Scott, D. (Eds.) (2004). *The Innovative University.* Pittsburgh: Carnegie Mellon University Press.

Rhoades, G., & Slaughter, S. (2004). Academic Capitalism in the New Economy: Challenges and Choices. *American Academic 1*(1), 37-59. Retrieved February 15, 2011, from http://www.aft.org/pdfs/highered/academic/june04/Rhoades.qxp.pdf

Robertson, R. (1990). Mapping the Global Condition: Globalization as the Central Concept. In M. Featherstone (Ed.), *Global Culture: Nationalism, Globalization, and Modernity* (pp. 15–30). Thousand Oaks, CA: Sage.

Schultz, C. (2005). The Corporate University in American Society. *Logos, 4.4*, fall 2005. Retrieved July 12, 2011, from http://www.logosjournal.com/issue_4.4/schultz.htm

Shane, S. (2004). *Academic Entrepreneurship: University Spinoffs and Wealth Creation*. Cheltenham, UK: Edward Elgar.

Slaughter, S., & Leslie, L.L. (1997). *Academic Capitalism: Politics, Policies, and the Entrepreneurial University*. Baltimore, MD: The John Hopkins University Press.

Slaughter, S., & Leslie, L.L. (2001). Expanding and Elaborating the Concept of Academic Capitalism. *Organization 8*(2), 154–161.

Smilor, R., & Matthews, J. (2004). University venturing: technology transfer and commercialisation in higher education. *International Journal of Technology Transfer and Commercialisation, 3*(1), 111–128.

Tuunainen, J. & Knuuttila, T. (2006). Akateeminen työ ja tutkimustulosten kaupallistaminen – mahdoton yhtälö? *Tiedepolitiikka, 3/06*, 27–36.

Van Looy, B., Ranga, M., Callaert, J., Debackere, K., & Zimmermann, E. (2004). Combining entrepreneurial and scientific performance in academia: towards a compounded and reciprocal Matthew-effect? *Research Policy, 33*, 425–441.

Vickers, K., Salamo, G., Loewer, O., & Ahlen, J. (2001). Creation of an entrepreneurial university culture, the University of Arkansas as a case study. *Journal of Engineering Education*, *90*(4), 617–622.

Wong, P.-K., Ho, Y.-P., & Singh, A. (2007). Towards an "Entrepreneurial University" Model to Support Knowledge-Based Economic Development: The Case of the National University of Singapore. *World Development, 35*(6), 941–958.

Ylijoki, O.-H. (2003). Entangled in academic capitalism? A case-study on changing ideals and practices of university research. *Higher Education, 45*, 307–335.

Finnish experiences

Chapter 3

From vocational educational institutions to entrepreneurially-oriented higher education institutions: the case of the Finnish universities of applied sciences

Anu Lyytinen

Introduction

The establishment of the Finnish polytechnic system[1] – which nowadays uses the English translation "university of applied sciences" (hereafter UAS) – was the largest reform of the Finnish higher education system during the 1990s (see Raivola et al. 2001). As in many other European countries, the Finnish universities of applied sciences were established alongside the science universities to represent the professional and practice oriented form of higher education aiming to meet the specific needs of the labour market and regional economies. (Kyvik 2008, 173; de Lourdes Machado et al. 2008, 251, 255; Salminen 1997, 312–325; Teichler 2008, 4.) In Finland, the

1. The Finnish *ammattikorkeakoulu* does not have an exact foreign role model in other countries. Accordingly the term *ammattikorkeakoulu* has no direct English translation. The term "polytechnic" was widely used in early stage and it has been the most established term and counterpart for the *ammattikorkeakoulu* in official parlance: e.g. Finnish Ministry of Education and Culture uses the term "polytechnic". However, the term has pointed out to be problematic in international contexts because in other countries polytechnic nowadays generally refers to any vocational education, especially secondary level vocational education (The Universities of Applied Sciences Network for the Development of Internationalisation 2006). When several European countries, for example the Netherlands, Germany and Austria, decided to use the English translation of "University of Applied Sciences" for their equivalent professional higher education institutions, the Rectors´ Conference of Finnish Universities of Applied Sciences made a recommendation to Finnish AMKs in 9.12.2005 to use the term University of Applied Sciences. (The Rectors´ Conference of Universities of Applied Sciences 2007.) The term "University of Applied Sciences" is used in this article.

goal was specifically to respond to the new requirements for professional skills, to develop the quality and standard of education as well as to improve its international comparability, regional impact and the administrative capacity of education system. (Government bill 319/1994 and 206/2002; Salminen 1997, 312–325.)

The UAS system was constructed by merging and upgrading the former post-secondary and higher vocational level educational institutions into the system of universities of applied sciences which originally consisted of 29 UASs operating under the administration of the Finnish Ministry of Education. Nowadays the number of UASs has decreased to 25 due to mergers. The particular aim of the UAS reform as well as the later reforms of the legislation has been to strengthen the capacity of the UASs to flexibly respond to the needs and changes of the labour markets, the business sector and regional development. (Government bill 319/1994.)

During the 1990´s also researchers became interested in understanding and redefining the changing role of the higher education institutions in the knowledge-based society (Miettinen & Tuunainen 2006, 16). The Triple Helix of university-industry-government relations (Etzkowitz & Leydesdorff 1997), the entrepreneurial and enterprise university models (e.g. Clark 1998, 2004; Marginson & Considine 2000) the concept of academic capitalism (Slaughter & Leslie 1997) as well as the Mode 1 - Mode 2 thesis (Gibbons et al. 1994) represent the best known conceptualisations to illuminate the rapprochement of the universities and the society from the different viewpoints (see also Miettinen & Tuunainen 2006). These conceptualisations have been further developed, complemented and applied in studying the changes, especially in universities and research in different countries. (e.g. Benner & Sandström 2000; Etzkowitz et al. 2000; Etzkowitz & Klofsten 2005; Kaukonen & Nieminen 1999; Nieminen 2005; Ylijoki et al. 2011.) However, there is less research applying these conceptualisations to investigating universities of applied sciences even if co-operation and close relationships with business and industry are, or should be, particularly characteristic of them. This article aims to fill this research gap. By way of three case examples it illustrates how the Finnish universities of applied sciences have built their capacities and transformed their practices to become regionally responsive higher education institutions. The organisational transformation dimensions of the entrepreneurial university (Clark 1998) are used as a framework for analysing and reflecting the senior institutional management and regional stakeholders' views of capacity building.

Background

It has been characteristic of the higher education systems in Europe that the introduction of a social or entrepreneurial role for higher education institutions has been a top-down phenomenon in which the role of the European Union and national governments in steering the development has been essential (Etzkowitz 2003; Mowery & Sampat 2005). In Finland, the establishment of the system of universities of applied sciences was dated to the same point of time – 1990´s – when the concept of national innovation system was adopted into the political agenda as the comprehensive tool for analysing and assessing the functions of higher education, science and technology systems by the Science and Technology Policy Council of Finland. It meant that the development of science and technology, but also of higher education, was adopted as the core of societal development and the social role of higher education institutions started to be analysed from the viewpoint of innovation systems. (Hakala et al. 2003, 32–33; Lemola 2001, 45; Miettinen 2002, 60–61, 68; Nieminen 2005, 13-14, 57; Science and Technology Policy Council 1990, 21–23.)

The regional dimension of the innovation policy strengthened in Finland during the 1990´s, particularly as a consequence of the visible role of the European Union and its structural funds (Lemola 1999, 133–134). As in many other European countries, one of the essential justifications of the establishment of the Finnish universities of applied sciences was their expected contribution to social and economic development of the regions, especially as the partner of the small and medium-sized companies. (cf. de Lourdes Machado et al. 2008, 252; Government bill 319/1994.)

In order to create flexible frames through which to co-operate with companies and industry, the steering systems of the UASs have been reformed step by step (see Government bill 206/2002). The first Act on Polytechnic Studies (255/1995) was decreed in 1995. According to the Act the aim of the UAS studies was to provide necessary knowledge and skills, based on the requirements of the working life and its development, to work in professional tasks of an expert. Within the limits of the teaching task the act also allowed UASs to pursue research and development that serves UAS teaching and supports working life. The permanent status of the UASs – granted between 1996 and 2000 – strengthened their options for developing and directing activities and relationships with their environment (Maljojoki 2002, 216, 231). The legislative reform of 2003 further improved the operating options and regional responsibilities of the universities of applied sciences. The Polytechnics Act (351/2003) expanded the tasks of universities of applied sciences by elevating applied research and development to the same level as UAS's basic tasks, parallel with teaching. According to the Act, "the universities of applied sciences have to offer

teaching which responds to the demands of the working life and its development, as well as being based on research and artistic starting points leading to the professional tasks of an expert". In addition, the task of the universities of applied sciences is "to carry out applied research and development that serves UAS education, supports the world of work and regional development, and takes the industrial structure of the region into account". The Act also defines the relationships of the UASs with their environment and external stakeholders by decreeing that UASs have to co-operate with the representatives of business and working life, especially in their own region, as well as with the Finnish and foreign higher education institutions and other educational institutions.

The development goals of the UASs´ regional development and innovation activities have been specified in The Development Plan for Education and Research (2003–2008) by the government as well as the reviews of Science and Technology Policy Council (2000, 2003, 2006). Both of these emphasise the regional responsibility of the universities of applied sciences, particularly in supporting small and medium-sized enterprises by providing education and services to SMEs. They also highlight that UAS networks and interaction with different partners, especially universities and university consortia, have to be increased in regional innovation activities. (Ministry of Education 2004, 45–46, 55; Science and Technology Policy Council 2000, 24, 51; 2003, 21, 40; 2006, 47, 49.)

Entrepreneurial transformation in higher education institutions

The transformation of higher education institutions in innovation systems has been increasingly examined from different viewpoints during the last two decades. Researchers have made numerous attempts to understand and explain how higher education institutions and science change as part of the knowledge-based society, national and regional innovation systems. (Miettinen & Tuunainen 2006, 16; Mowery & Sampat 2005.) The best known and most influential attempts to redefine and describe the new social or entrepreneurial role of higher education institutions and science include the conceptualisations of the Triple Helix thesis illustrating the institutional convergence among universities, industry and government (Etzkowitz & Leydesdorff 1997); the entrepreneurial and enterprise universities' models which focus on changes in the organisation, management and governance of universities (e.g. Clark 1998, 2004; Marginson & Considine 2000); and the concept of academic capitalism, which refers to market-like behaviour of institutions and faculty

in the form of competition for external financial resources (Slaughter & Leslie 1997). The changes in science and research have been illustrated as the shift from Mode 1 disciplinary-based, basic research to more multidisciplinary, applied and problem-oriented Mode 2 type research (Gibbons et al. 1994). (see also Miettinen & Tuunainen 2006, 16.)

The literature on entrepreneurial universities offers one framework for analysing changes in organisation and governance of higher education institutions. One of the pioneering studies on entrepreneurial universities is Burton Clark's (1998) study *Creating Entrepreneurial Universities: Organizational Pathways of Transformation.* Since then, the number of studies in the field has increased and the conceptualisations of the enterprise university or the entrepreneurial university have been further elaborated and applied to studying changes in the organisation of universities (e.g. Clark 2004; Etzkowitz et al. 2000; Jacob et al. 2003; Marginson & Considine 2000; Shattock 2005; Williams 2003; Williams & Kitakaev 2005).

In Clark's (1998) study "entrepreneurial" refers to the characteristic of social system that is higher education institutions, faculties and schools. With the entrepreneurial university he refers to active efforts of higher education institutions/their units in institution-building and innovating that require taking risks. (Clark 1998, 3–4.) The basic assumption of Clark is that there is a growing imbalance between the environmental demands and the institutions´ capacity to respond. Accordingly there is a need to transform the organisational elements of higher education institutions to strengthen their capacity to respond more flexibly and selectively to changes taking place both in the external environment and in the knowledge domain of higher education institutions. Clark studied the organisational pathways of universities in an entrepreneurial direction through five case studies of English, Dutch, Scottish, Swedish and Finnish universities. As a result of the case studies, he summarised five organisational elements that he concluded to be important in transforming universities for more entrepreneurial ways of action. These elements are the strengthened steering core, the expanded developmental periphery, the diversified funding base, the stimulated academic heartland and the integrated entrepreneurial culture. (Clark 1998.)

According to Clark (1998) 'strengthened steering core' refers to a higher education institution's efforts to strengthen and systematise its managerial capacities. Although the strengthened steering core may assume different forms, it is essential that it should include both central managerial and academic groups to reconcile the managerial values with traditional academic ones. It is also characteristic of the entrepreneurial university to create outreach units, programmes and other linkages that cross the traditional organisational boundaries to link up with external actors

and groups. Clark calls this the 'expanded developmental periphery'. These boundary structures mediate between academic departments and the external environment by promoting new competencies or generating income, for example. Respectively, 'a diversified funding base' can enhance the self-regulative capacities of higher education institutions and create opportunities to make moves. Clark emphasises particularly second and third stream funding sources, referring to funding from different external financiers. To initiate change, the essential question also is how the activities of the academic units – which are typically formed around disciplines or fields of education – are stimulated by reaching the external environment, for example with new relationships and attracting income from second and third-stream funding sources. As the integrative concept, Clark uses the 'integrated entrepreneurial culture' meaning that enterprising universities also develop a work culture that embraces change. (Clark 1998, 3–8.)

Method and data

This article is based on the case studies of three[2] Finnish Universities of Applied Sciences: Seinäjoki UAS, Satakunta UAS, Jyväskylä UAS (Lyytinen 2011). All the case UASs have been operating as UAS for about the same length of time: they were granted the permanent operating licence either in 1996 or in 1997 (National Board of Education 2003, 137, 139, 146, 148). The UASs were medium-sized, multidisciplinary and regional higher education institutions, but they were located in different regional innovation environments, which meant that they provided differing and complementary perspectives on the research problem. (e.g. Yin 2004.)

The analysis of the article is based on empirical data collected between 2003–2005 by stakeholder analysis carried out in each region as well as the thematic interviews with the senior institutional management of the case UASs. The specific aim of the stakeholder analyses was to outline the interactive relations and activities that link universities of applied sciences to other actors and organisations of the regional innovation environment. The participants of the stakeholder analyses were the rectors of the case UASs, the directors of business development of the respective towns, the managing directors of the technology centres, the regional development directors of the Regional Councils, the heads of the technology units of the res-

2. The study was originally based on the multiple-case study design in four UASs. However, Tampere University of Applied Sciences merged with Pirkanmaa University of Applied Sciences on 1.1.2010 after the data collection of the study. That means Tampere UAS does not exist anymore in its original form. To avoid misunderstandings Tampere UAS has been left out from the analysis of this article.

pective Employment and Economic Development centres as well as the research liaison officers or equivalent from the universities or university consortia (coded as SA4–SA15). These individuals bear the formal responsibility for participating in regional development. The thematic interviews concentrated more on the internal dynamics of capacity building (organising, management and governance) inside the case UASs. The interviewees were directors, development directors, research directors, education managers as well as research and development managers of the case UASs (coded as I3–I10). The documentary data, including regional co-operation strategies of higher education institutions and internal regulations of the case UASs, was used as the support material.

The organisational transformation dimensions – especially strengthening the steering core, extension of the outreach structures and stimulation of the academic activities – of the entrepreneurial university (Clark 1998) are used as the framework for analysing and reflecting the senior institutional management and regional stakeholders´ views on how the Finnish universities of applied sciences have built their capacity and transformed their practices to become regionally responsive higher education institutions.

Transformation in the case institutions

Seinäjoki University of Applied Sciences has been composed of ten previous post-secondary level vocational educational institutions (National Board of Education 2003, 148). It has profiled itself as a regional higher education institution that offers teaching and services in seven fields of education in six geographically dispersed localities in South Ostrobothnia which is a province in the western part of Finland. The licence holder of the Seinäjoki University of Applied Sciences is the Seinäjoki Joint Municipal Authority for Education which is owned by 14 municipalities. (I5; National Board of Education 2003, 148.)

The rector of the Seinäjoki UAS is the chair of the Joint Municipal Authority for Education, which administers both UAS and secondary level education that makes the rector's position strong. According to interviewee I5, by diving its academic activities into two result areas: the teaching result area and the research and development result area, the UAS wanted to separate the traditional teaching activities (UAS degrees, UAS master's degrees, some professional specialisation studies) financed by first stream unit price funding of the Ministry of Education from research and the development and paid service activities that are financed mainly by external second

and third stream funding sources. A vice-rector is responsible for teaching result area and a research director was appointed to be part of the central administration and in charge of the research and development result area. (I5.)

It seems that, as it is typical in a multidisciplinary and geographically dispersed UAS, the challenge of Seinäjoki UAS is to seek balance between the centralised solutions and schools' freedom of choices (see Auvinen et al. 2005, 108). Interviewees I5 and I6 emphasised, that characteristic for the UAS is that the decision-making is decentralised and the schools have a lot of autonomy to decide on their own issues: The schools are responsibility centres and responsible for their own results and nowadays need even more to call attention to selecting their strengths and fields of expertise. According to interviewee I5, the senior institutional management wants to enable uniqueness and differences of the fields of education but interviewee also emphasised that it is important that the UAS has a certain level of target and that it shows itself as an integrated higher education institution. To build an integrated higher education institution and culture, the UAS increasingly aims at creating common administrative practices and internal policies. Governing bodies, such as the UAS Board and the Heads of Schools Meeting, have been according to interviewee I5 "ways through which the UAS aims at establishing cohesion".

It was noted by interviewee I5, that the good financial standing of the Joint Municipal Authority and the commitment and financial support of the owner municipalities have made it possible to generate surpluses for the Joint Municipal Authority for Education to add to the development fund. This has helped the UAS to build reserves which it has used to make investments in new technology infrastructure (e.g. Mediwest Health Technology Centre and Nikkarikeskus Development Centre), financing professorships of the South Ostrobothnian University Network EPANET in the research fields that are important for the purposes of the UAS´ teaching activities as well as to stimulate its own academic capacity. It was evaluated by the representative of the UAS and regional actors SA11 and SA14 that through its activeness and the investments the UAS have had an influential role in building and reforming the regional innovation system. According to interviewee I5 the senior institutional management has aspired to manage so that senior lecturers would have connection to EPANET professors. Interviewees I5 and I6 highlighted that through the development fund the UAS has also allocated resources to fund staff members' study leave for undertaking postgraduate study. (SA14; see also Riukulehto 2007, 132, 138.)

As it is typical in higher education institutions each of the schools of the UAS has connections and orientation of its own to the environment and launching teaching, applied research and development activities in co-operation or to the needs of the

external customers vary between the schools and fields of education. The traditions of the previous vocational educational institutions still reflect in background. (I5; I7; see also Clark 1998, 141; Clark 1983; Marttila et al. 2005, 8.) According to interviewee I5, the adoption of new work culture and practices, such as new project-based educational methods, is often easier for younger teachers.

The School of Health Care and Social Work as well as the School of Agriculture and Forestry were mentioned by interviewee I5 as the examples of the units that have been actively involved in long-term development of their expertise and collaboration with external partners. In the early stage the UAS also had a separate Social and Health Care Research and Development Centre, which was located in Mediwest Health Technology Centre and specialised in providing research, development, education and consultancy services to external clients and partners in co-operation. However, interviewees I5 and I7 noted that the problem with such units were that they were too loosely linked to academic units (see also Marttila et al. 2005, 32–33). According to interviewee I6, the separate units were also under pressure to be economically effective: they should achieve at least a "plus minus zero" situation even if they do not generate income. The role of the School of Agriculture and Forestry had been especially important in a situation in which the region, with its long agricultural tradition, had tried to adapt to the challenges posed by the European Union and its regional policy. (I5; SA14; see also Riukulehto 2007, 81.) The field of technology has a long tradition of co-operation with companies. According to interviewee I7, the establishment of the degree programmes of the School of Engineering had been based on the needs of the companies and corresponded to the industries represented in the region.

Satakunta University of Applied Sciences comprised 13 previous post-secondary level vocational educational institutions which nowadays form a multidisciplinary UAS with three faculties offering teaching in five fields of education in five municipalities in the Satakunta which is the province in south-western Finland. The licence holder of the UAS is the City of Pori. (National Board of Education 2003, 137.)

The operation principle of the Satakunta UAS is to serve the region. According to interviewee I8, the UAS was willing to take an active role as a regional developer in a situation where it was the first and only higher education institution in Satakunta province and companies needed research and product development expertise. It was argued by interviewee SA9 that to respond to the local needs the UAS has developed its structures from the beginning: the common O´Sata Research and Development was established in 1997 as the unit to sell contract research and development services to the business sector. It served as the intermediary in transferring the knowledge

and expertise of the UAS to the companies and business life. In addition to O´Sata unit, the evaluation of the representative of the UAS´s and regional actors' SA7, SA8 and SA9 was that the important services and knowledge mediation mechanism of Satakunta UAS to other regional actors mainly take the shape of an O´Sata Enterprise Accelerator, a research and development environments, and an expertise exchange.

It can be said that in the administrative sense the O'Sata increased the unity and promoted an integrated administrative culture within the new multidisciplinary UAS by creating a common channel for academic services as well as bringing operating principles to the whole organisation. Interviewee SA9 noted that this was particularly important in the initial situation when each educational unit had its own culture and traditions as an individual educational institution. Accordingly, the funding applications of the different units could have overlapped and funding decisions might have been in conflict with the UAS's common strategic and operating principles.

As interviewee I8 argued, the educational units have traditionally been strong in Satakunta UAS but through the strategic steering the position of the faculties has been strengthened. This means that the Faculties of Business and Culture, Social Sciences and Health Care, and Technology and Maritime Management are accountable basic units. The full-time deans were appointed to faculties in 1999. As the heads of these basic units, deans have become responsible for budgets and academic activities in their fields. They are direct subordinates of the rector of the UAS. (Malinen et al. 2009, 14–15; Satakunnan ammattikorkeakoulu 2005; Satakunnan ammattikorkeakoulu 2000.) The deans also participate in decision-making in central governing bodies: management group and research council. It seems that these governing bodies have had an important role in building a shared administrative culture and collective choices. One dean characterised decision-making in research council as "collegial and democratic approach that ensures that others´ issues are approved and that people are committed to these issues". Another interviewee I9 considered it as important that several people – the rector, development director, financial director, deans and the director of continuing education – participate in decision-making in the management group because in that case they are not so vulnerable to environmental pressures.

It was agued by interviewee I9 that in present situation the strategy controls the activities of the faculties more than in earlier times. The strategies were formulated by using the same frames in all faculties. In addition to the common focus areas of the UAS, each faculty has profiled and chosen its focus areas. The idea is, for example, that the search for partners in co-operation and external funding sources is concentrated in these areas. However, as it is typical in higher education institutions, the faculties and fields of education are in different development path in terms of

their attitudes to and involvement in external relationships (see also Clark 1988, 141–142). According to interviewees SA9 and I9, the field of technology has the longest tradition in contracting and working on joint projects with individual business and industry customers as well as academic co-operation with the corresponding university unit. Instead, the challenge of the social services and health care sector had traditionally been in seeking external clients able to pay for their services even though the funding prospects had improved in recent years. (I8; I9; SA9; see also Slaughter & Leslie 1997.)

Jyväskylä University of Applied Sciences expanded in several stages by the extension of its operating licence (Suosara 2007, 132). In its entirety UAS has been composed of 12 previous post-secondary level vocational educational institutions which nowadays form a multidisciplinary UAS that offers teaching in seven fields of education in eight schools and operates in three localities in Central Finland (National Board of Education 2003, 146). In contrast to the other case UASs, Jyväskylä UAS is a privately owned higher education institution. Its licence holder is Jyväskylä University of Applied Sciences Ltd. whose ownership is divided between the City of Jyväskylä and three Joint Municipal Authorities for Education. In spite of the form of the maintaining organisation, the owners of the limited company are public organisations and the public funding from state budget is the main funding source of the Jyväskylä UAS as well as other Finnish UASs (see also Kohtamäki 2009, 41).

In the limited company, the rector has a strong position: He is the rector of the UAS as well as the chief executive officer of the limited company. According to interviewee I3, the management style of Jyväskylä UAS is based essentially on line authority between the rector, the heads of schools and the research and development managers and education managers of schools: The schools are the responsibility centres and the heads of the schools are responsible for the strategy and resources of the unit. They report and relate directly to the rector through the performance negotiation mechanism: meaning that the rector and the head of each school negotiate annually about the targets and the results of the school. Regional engagement is part of the research and development and education processes under evaluation. As the example of the recent organisational transformation interviewee I3 mentioned the appointment of the full-time and part-time research and development managers to each school in subordination of the head of the school to be responsible for co-ordination of research and regional development, managing project portfolio as well as stakeholder and customer relations. (I3; I10; see also Jyväskylän ammattikorkeakoulu 2005.)

The representative of the UAS and the regional actors SA4, SA5 and SA6 evaluated that the linkages of the Jyväskylä UAS to other regional actors take the diverse forms of relationships and co-operation with companies and public organisations. The schools and fields of education also had different practices of looking for outreach (see also Tulkki & Lyytinen 2001, 50). However, the UAS had also encountered several challenges: both the representative of the UAS and the regional actors evaluated that the strategic challenge has been how to reflect the impacts of the activities of the UAS on the whole province and how to obtain information about regional needs and enter into contracts with new company groups that do not know UAS. Establishing a provincial learning place network with the University of Jyväskylä, the Vocational Institute, VTT Technical Research Centre of Finland, and the Technology Centre has been one outreach response to share and obtain information, especially about the needs of the small and medium-sized companies and to increase interaction between education institutions and companies. The major internal challenges have been – according to interviewee I3 – how the operation culture which has its origins in traditions and practices of educational institution accepts change and what kind of incentive systems ought to be developed in the UAS context.

The representatives of the UAS and regional actors characterised that, the School of Technology had a long tradition in co-operation with companies: It had specialised particularly in applied research and the development of companies´ processes, while the orientations of the other fields of education were more on incremental development of working life. The Institute of Natural Resources as well as the School of Social and Health Care were mentioned as the examples – by interviewees I3 and SA6 – of the units which had actively and purposefully been involved in external relationships. The Institute of Natural Resources had profiled itself particularly on regional development work and projects which constituted a large share of its activities and generated about half of the institute's income. According to interviewee SA6, the School of Social and Health Care is actively involved in co-operative ventures particularly with public organisations, especially with the Central Finland Health Care District, which was its main customer. The interviewee also noted that because the social and health care markets were more focused on public sector co-operation and development projects, the school had had challenges to find external financiers and therefore it had used mainly student labour force. The UAS's School of Business Administration had been involved in the Tiimiakatemia entrepreneurship programme specialising in entrepreneurship education whereas the School of Tourism, Catering and Domestic Services had participated in two national network centres of expertise: the Centre of Expertise in

the Food Industry in Central Finland and the Centre of Expertise for Tourism being in charge of Wellbeing Tourism. (SA5; SA6; I3; I10; see also Jyväskylän yliopisto ja Jyväskylän ammattikorkeakoulu 2002, 18–21; Suosara 2007, 132.)

Conclusions and discussion

This chapter discusses – in the light of the case examples – how the organisational transformation dimensions of entrepreneurial university (Clark 1998) illustrate the capacity building of the Finnish UASs for regional engagement and what kind of challenges the UASs have encountered on their way from the vocational educational institutions to regionally responsive higher education institutions.

Although there were differences between the universities of applied sciences, the results of the study showed that, all the UASs have built their capacities for regional engagement in ways that reflect the intensification of entrepreneurial modes of action. The UASs have strengthened their managerial capacities: The position and task specialisation of the senior institutional management and middle-management has been strengthened and new managerial positions have been established the task of which increasingly include responsibilities for arranging external funding and managing stakeholder and customer relationships. The UASs have also passed the responsibilities down to schools in which the deans or the heads of the schools have a central position. (cf. also Clark 1998; Marginson & Considine 2000; Marttila et al. 2005.) At the same time, the central governing boards – consisting of the representatives of the senior institutional management, schools and units – have acted as the important forums for preparing collective choices and building a shared culture and common practices for the whole higher education institution (cf. Clark 1998; Schein 1992). This has been particularly important in the situation in which most of the Finnish UASs are multi-campus institutions which have been composed of several previous post-secondary level vocational educational institutions with their own histories and traditions.

It seems that the regional responsibilities have even encouraged the schools to search for their diversified profiles and fields of know-how, raise additional funds and establish linkages to other actors yet the strategies and targets direct the activities more than in earlier times. It can be said that 'the expanded developmental peripheries' are mainly blended in with 'the academic heartlands' of the UASs. The research results revealed that the established outreach structures and linkages – R&D units, research and development environments, enterprise accelerator, expert

exchange, technology infrastructure, learning place network, centres of expertises – intermediated and transferred knowledge and information as well as facilitated mutual learning between the UAS and the environment.

Nevertheless, as it is typical for higher education institutions and observed also in other studies mainly in university context (e.g. Clark 1983; Clark 1998, 141–142; Slaughter & Leslie 1997; Lyytinen et al. 2008, 62–63; Ylijoki et al. 2011), the fields of education differ from each other in terms of how close they are to the external environment and how easy and characteristic it is for them to adopt entrepreneurial behaviour in the form of contracting with the external partners or acquiring third and second stream funding sources. However, regardless of the field of education, purposeful and persevering orientation was considered to be the common denominator behind the successful units. The special challenge of the UASs has also been that alongside with establishing linkages to business life, they have built their capacity and transformed their practices originating from the traditions of the teaching only vocational educational institutions towards the practices of higher education institutions which also conduct applied research and are involved in development work. This has encouraged the teaching staff of the UASs to strengthen their relationships with universities and pursue postgraduate studies. The challenge for the senior institutional management of the UAS has been to develop organisational frameworks, e.g. personnel policy and incentives that support the realisation of the research work.

Even if Clark's transformation elements are challenges which have been faced by Finnish universities of applied sciences in one way or another, and even though the universities of applied sciences have been given a pronounced role as regionally responsive higher education institutions, there are some limitations to the applicability of Clark's concepts to UAS institutions.

First of all, the history of the Finnish universities of applied sciences as multidisciplinary higher education institutions is still short. They have been operating on a permanent basis only since 2000 and the new tasks were confirmed in August 2003. Thus, the UASs are still seeking their 'shape'.

Secondly, Clark's concepts were developed and applied in the university context; however, the mission, tasks and history of the universities of applied sciences are somehow different. Even if the steering and governance of the Finnish universities of applied sciences have moved closer to the university sector in recent years, the UASs lack the traditions of academic authority and the scientific basis enjoyed by universities. It is argued that instead of academic values, the Finnish universities of applied sciences are driven more by political and entrepreneurial values (Larsen et al. 2009, 52). It can be said that in the context of the Finnish universities of app-

lied sciences the question is not so much about the transformation from academic institution to a more entrepreneurially-oriented institution but rather about a large transformation from being vocational educational institutions to multidisciplinary and entrepreneurially-oriented higher education institutions. The process towards an entrepreneurial institution is still under way. The central goal of the present UAS reform 2011–2012 is to strengthen the preconditions of the UASs to respond – through their teaching, research and development – more independently and flexibly to the changing development needs of working life, society and regions (Ministry of Education and Culture 2012).

Thirdly, although the governance model of the Finnish higher education institutions is moved closer to the enterprise sector, the universities of applied sciences and other higher education institutions have had and continue to have a strong public mission in Finland compared to the higher education institutions closest to Clark, such as the United States and the United Kingdom. In those countries, entrepreneurship has emerged bottom-up due to a lack of centralised control. In Finland entrepreneurship is rather a top-down phenomenon and has come as a result of central government regulation (cf. Mowery & Sampat 2005; Etzkowitz 2003). Therefore, the challenge for the Finnish universities of applied sciences can be set to build entrepreneurial modes of action that are appropriate to Finnish culture and society as well as the needs of their respective regions.

References

Act on Polytechnic Studies 255/1995. Laki ammattikorkeakouluopinnoista 255/1995. FINLEX-tietokanta <URL:http://www.finlex.fi/fi/>.

Auvinen, P., Dal Maso, R., Kallberg, K., Putkuri, P. & Suomalainen, K. (2005). *Opetussuunnitelma ammattikorkeakoulussa*. Pohjois-Karjalan ammattikorkeakoulun julkaisuja B: Selosteita ja opetusmateriaalia 9. Joensuu: Pohjois-Karjalan ammattikorkeakoulu.

Benner, M. & Sandström, U. (2000). Institutionalizing the triple helix: research funding and norms in the academic system. *Research Policy* 29, 291–301.

Clark, B. (1983). *The higher education system. Academic organization in cross-national perspective*. Berkley: University of California Press.

Clark, B. (1998). *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*. Oxford: Pergamon.

Clark, B. (2004). *Sustaining Change in Universities. Continuities in case studies and concepts*. Maidenhead: Open University Press.

de Lourdes Machado, M. Ferreira, J.B., Santiago, R. & Taylor, J.S. (2008). Reframing the Non-University Sector in Europe: Convergence or Diversity? In Taylor, J., Ferreira,

J. B., De Lourdes Machado, M. & Santiago, R. (Eds.) *Non-University Higher Education in Europe*. Milton Keynes: Springer, 245–260.
Etzkowitz, H. 2003. Research groups as ´quasi-firms`: the invention of the entrepreneurial university. *Research Policy* 32, 109–121.
Etzkowitz, H. & Klofsten, M. (2005). The innovating region: towards a theory of knowledge-based regional development. *R&D Management* 35 (3), 243–255.
Etzkowitz, H. & Leydesdorff, L. (1997). *Universities and the Global Knowledge Economy: A Triple Helix of University-Industry-Government Relations*. Science, Technology and the International Political Economy Series. London: Pinter.
Etzkowitz, H., Webster, A., Gebhardt, C. & Terra, B. (2000). The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm. *Research Policy* 29, 313–330.
Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P. & Trow, M. (1994). *The new production of knowledge. The dynamics of science and research in contemporary societies*. London: SAGE.
Government bill 319/1994. Hallituksen esitys Eduskunnalle laiksi ammattikorkeakouluopinnoista ja eräiksi siihen liittyviksi laeiksi HE 319/1994. FINLEX–tietokanta <URL:http://www.finlex.fi/fi/>.
Government bill 206/2002. Hallituksen esitys Eduskunnalle ammattikorkeakoululaiksi ja laiksi ammatillisesta opettajankoulutuksesta HE 206/2002. FINLEX-tietokanta <URL:http://www.finlex.fi/fi/>.
Hakala, J., Kaukonen, E., Nieminen, M. & Ylijoki, O.-H. (2003). *Yliopisto – Tieteen kehdosta projektimyllyksi? Yliopistollisen tutkimuksen muutos 1990-luvulla*. Helsinki: Gaudeamus.
Jacob, M., Lundqvist, M. & Hellsmark, H. (2003). Entrepreneurial transformation in the Swedish University system: the case of Chalmers University of Technology. *Research Policy* 32, 1555-1568.
Jyväskylän yliopisto ja Jyväskylän ammattikorkeakoulu (2002). Jyväskylän yliopiston ja Jyväskylän ammattikorkeakoulun aluekehitysstrategia.
Kaukonen, E. & Nieminen, M. (1999). Modeling the Triple Helix from a Small Country Perspective: The Case of Finland. *Journal of Technology Transfer* 24, 173–183.
Kohtamäki, V. (2009). *Financial Autonomy in Higher Education Institutions: Perspectives of Senior Management of Finnish AMK Institutions*. Higher Education Finance and Management Series/Tampere University Press.
Kyvik, S. (2008). The Non-University Higher Education Sector in Norway. In Taylor, J., Ferreira, J. B., De Lourdes Machado, M. & Santiago, R. (Eds.) *Non-University Higher Education in Europe*. Milton Keynes: Springer, 169–189.
Larsen, I., M., Maassen, P. & Stensaker, B. (2009). Four Basic Dilemmas in University Governance Reform. *Higher Education Management and Policy* 21 (3), 41–58.
Lemola, T. (1999). Different Perspectives on the Problems and Challenges Facing the Finnish Innovation System. In Schienstock, G. & Kuusi, O. (Eds.) *Transformation Towards a Learning Economy: The Challenges for the Finnish Innovation System*. Helsinki: Sitra, 130–140.
Lemola, T. (2001). *Tiedettä, teknologiaa ja innovaatioita kansakunnan parhaaksi. Katsaus Suomen tiede- ja teknologiapolitiikan lähihistoriaan*. Työpapereita 57/2001. VTT, Teknologian tutkimuksen ryhmä.

Lyytinen, A. (2011). *Finnish Polytechnics in the Regional Innovation System – Towards New Ways of Action*. Higher Education Finance and Management Series. Tampere: Tampere University Press.

Lyytinen, A., Marttila, L. & Kautonen, M. (2008). *Tutkimus- ja kehitystoiminnan haasteita ja mahdollisuuksia monialaisissa ammattikorkeakouluissa*. Tieteen-, teknologian- ja innovaatiotutkimuksen yksikön työraportteja 2/2008. Tampere: Tampereen yliopisto.

Malinen, H., Hallikainen, J., Karttunen, P., Majander, M., Pudas, M. & Mustonen, K. (2009). *Satakunnan ammattikorkeakoulun laadunvarmistusjärjestelmän auditointi*. Korkeakoulujen arviointineuvoston julkaisuja 6:2009. Helsinki: Korkeakoulujen arviointineuvoston julkaisuja.

Maljojoki, P. (2002). Ammattikorkeakoulut ja alueelliset innovaatiojärjestelmät. In Liljander, J.-P. (Ed.) *Omalla tiellä: ammattikorkeakoulut kymmenen vuotta*. Helsinki: Arene & Edita, 215–234.

Marginson, S. & Considine, M. (2000). *The enterprise university: power, governance and reinvention in Australia.* Cambridge: Cambridge University Press.

Marttila, L., Kautonen, M., Niemonen, H. & von Bell, K. (2005). *Ammattikorkeakoulujen T&K-toiminta: T&K-yksiköt koulutuksen, tutkimuksen ja kehittämistyön rajapinnassa.* Työelämän tutkimuskeskuksen työraportteja 74/2005, Tampere: Tampereen yliopisto.

Miettinen, R. (2002). *National innovation system: scientific concept or political rhetoric*. Helsinki: Edita.

Miettinen, R. & Tuunainen, J. (2006). Johdanto. Teoksessa Miettinen, R., Tuunainen, J., Knuuttila, T. & Mattila, E. (toim.). *Tieteestä tuotteeksi? Yliopistotutkimus muutosten ristipaineessa*. Helsinki: Yliopistopaino, 13–27.

Ministry of Education (2004). *Koulutus ja tutkimus 2003–2008, kehittämissuunnitelma*. The development Plan for Education and Research 2003-2008. Opetusministeriön julkaisuja 2004:6. Helsinki.

Ministry of Education and Culture (2012). *Ammattikorkeakoulujen uudistamisen suuntaviivat*. Available <http://www.minedu.fi/export/sites/default/OPM/Koulutus/koulutuspolitiikka/Hankkeet/amk_uudistus/liitteet/amk_suuntaviivat_060911.pdf>

Mowery, D. & Sampat, B. (2005). Universities in national innovation systems. In Fagerberg, J., Mowery, D. & Nelson, R. (Eds.) *The Oxford handbook of innovation*. Oxford: Oxford University Press, 209–239.

National Board of Education (2003). *Tietoja ammatillista koulutusta antavien oppilaitosten ja ammattikorkeakoulujen muutoksista vuosina 1990–2003*. Moniste 10/2003. Helsinki: Edita.

Nieminen, M. (2005). *Academic Research in Change. Transformation of Finnish University Policies and University Research during the 1990s*. Helsinki: Finnish Society of Sciences and Letters.

Polytechnics Act (351/2003). FINLEX-tietokanta <URL:http://www.finlex.fi/fi/>.

Raivola, R., Kekkonen, K., Tulkki, P. & Lyytinen, A. (2001). *Producing competencies for learning economy*. Sitra Reports series 9. Helsinki: Sitra.

Rectors Conference of Finnish Universities of Applied Sciences (2007). Muistio ammattikorkeakoulujen englanninkielisestä nimekkeestä. Available <http://www.arene.fi/data/dokumentit/20070820T150820_68807.pdf>

Riukulehto, S. (2007). *Tietoa, tasoa ja tekoja. Seinäjoen ammattikorkeakoulun ensimmäiset kymmenen vuotta*. Seinäjoen ammattikorkeakoulun julkaisusarja B. Raportteja ja selvityksiä 32. Jyväskylä: Gummerus.
Salminen, H. (1997). Suomalaisen ammattikorkeakoulun syntyyn vaikuttaneita tekijöitä. *Kasvatus* 28 (4), 312–325.
Satakunnan ammattikorkeakoulu (2000). Satakunnan ammattikorkeakoulun tulosanalyysi vuoden 1999 toiminnasta.
Satakunnan ammattikorkeakoulu (2005). Satakunnan ammattikorkeakoulun toimintasääntö
Schein, E. (1992). *Organizational Culture and Leadership*. San Francisco: Jossey-Bass.
Science and Technology Policy Council of Finland (1990). *Review 1990: guidelines for science and technology policy in the 1990's*. Helsinki: Science and Technology Policy Council of Finland.
Science and Technology Policy Council of Finland (2000). *Review 2000: The Challenge of Knowledge and Know-how*. Helsinki: Edita.
Science and Technology Policy Council of Finland (2003). *Knowledge, innovation and internationalisation*. Helsinki: Edita.
Science and Technology Policy Council of Finland (2006). *Science, technology, innovation*. Helsinki.
Shattock, M. (2005). European Universities for Entrepreneurship: Their Role in the Europe of Knowledge: The Theoretical Context. *Higher Education Management and Policy* 17 (3), 13–25.
Slaughter, S. & Leslie, L. (1997). *Politics, Policies and the Entrepreneurial University*. Baltimore: John Hopkins University Press.
Suosara, E. (2007). Laajenemisen portaat ja vaiheet vuoteen 2000. Julkaisussa Panhelainen, M. (toim.) *Kokeilua, kehitystä, tuloksia: Jyväskylän ammattikorkeakoulun alkuvaiheen tarina. Jyväskylä*: Jyväskylän ammattikorkeakoulu, 126–143.
Teichler, U. (2008). The End of Alternatives to Universities or New Opportunities? In Taylor, J., Ferreira, J. B., De Lourdes Machado, M. & Santiago, R. (Eds.) *Non-University Higher Education in Europe*. Milton Keynes: Springer, 1–13.
Tulkki, P. & Lyytinen, A. (2001). *Ammattikorkeakoulu innovaatiojärjestelmässä. Osa 1: Alueelliset innovaatioverkostot*. Väliraportti. Tampereen yliopiston työelämän tutkimuskeskuksen työraportteja 65/2001. Tampere: Tampereen yliopisto.
The Universities of Applied Sciences Network for the Development of Internationalisation/ Kirsti Virtanen (2006). *Ammattikorkeakoulujen englanninkielistä nimeä University of Applied Sciences koskeva arviointi.* Saatavilla <http://www.pinnet.fi/www/uploads/raportit/Arviointiraportti.pdf>
Williams, G. (2003) (Ed.). *The Enterprising University: Reform, Excellence and Equity*. Buckingham: The Society for Research into Higher Education & Open University Press.
Williams, G. & Kitaev, I. (2005). Overview of National Policy Contexts for Entrepreneurialism in Higher Education Institutions. *Higher Education Management and Policy* 17 (3), 125–141.
Yin, R. (2003). *Case Study Research: Design and Methods*. Thousand Oaks: SAGE.
Ylijoki, O.-H., Lyytinen, A. & Marttila, L. (2011). Different research markets: a disciplinary perspective. *Higher Education* 62, 721–740.

Chapter 4

Driving strategic development in Finnish universities: Reflecting on two case study examples

Vuokko Kohtamäki

Introduction

This paper focuses on the very topical subject of strategic management and development in universities from a practical point of view. The area is deemed to have prominent connections to the fields of management, organisational and administrative studies. However, strategic management and strategic development are relatively new phenomena in the university context (e.g. Seidl, 2007). This is certainly the case also in Finnish higher education institutions. Thus far, the strategic management of Finnish universities has not been widely researched; only a few relevant studies can be found (e.g. Kasvio 1999; Lammi 2003; Mälkiä & Vakkuri 1999; Malkki 1999; 2002).

Finnish universities are taking their first tentative in the new dynamic environment following the national university reform. This entails that the universities develop their strategic management and other management systems under totally different circumstances than in the collegially-oriented management cultures and structures of earlier days. The section entitled 'Finnish university reform' will briefly specify the main elements of the new management frameworks of the universities.

The purpose of this paper is to explore the strategies of two Finnish universities by analysing the environmental factors identified by strategies of each university, the strategic priorities articulated by the universities in their strategy documents

and the purpose of university level strategy as a whole. These considerations from the basis of the explorative questions used to evaluate strategic development from a practical management perspective in relation to universities.

The structure of this paper consists of six parts: following the introduction (first paper) major ideas of Finnish university reform will be presented (second part). The third section outlines the theories of strategic management and concepts of strategy developed by Mintzberg (1987) and Chaffee (1985). In the fourth part, the research questions and research method are introduced. The fifth section presents the empirical findings and the sixth and final part is focused on conclusions.

Finnish university reform

The Universities Act of 2009 replaced the Universities Act of 1997. The national goals of an extensive Finnish university reform – of which the Universities Act is one major part – are to provide better opportunities for universities to serve and cope with the surrounding society, to diversify funding bases and to increase university competitiveness and effectiveness (Ministry of Education 2009). According to the Government bill (2009) the strategic goal setting in universities is strengthened by increasing their autonomy and supported through their new internal governance and management systems and more flexible operating framework principles.

The Universities Act or strengthened autonomy as such does not change or develop the strategic management within universities. However, there are new elements that can be deemed to motivate or even compel the universities to develop their management and management systems. First, the universities are now persons under public law (14 universities) or foundations (2 universities). Universities have their own legal capacities and they are no longer part of the legal person of the state. The universities are legally responsible and financially liable for their operations. This increasing responsibility can also be seen as an incentive to develop university management and management systems. Second, the new institutional level governing board has an external chair and a totally new composition with a maximum of 40 per cent of board members being external (earlier only 1–2 external members). It is also possible that the majority is represented by external members if the university prefers such board structure. Thus, external stakeholders have a forum to be more engaged in internal governance of universities. Third, universities have rectors appointed by their governing bodies. Earlier, the rector was elected internally by the university and s/he chaired the governing board. The rector as a chief executive is

responsible for managing the operations and finances of the university. Fourth, the legal status of university personnel changed from being civil servants to ordinary employees. Hence, universities have more freedoms to develop the university-specific personnel and employer policies.

Regulatory frameworks, like the Universities Act, shape the autonomy and strategic management of universities but so also do a number of other public policies. The Finnish Government Programme (2011), the structural development programme of higher education institutions (e.g. Ministry of Education and Culture 2011), the Development Plan for Education and Research 2011–2016 (Ministry of Education and Culture 2011) and public research funding policies (e.g. Academy of Finland 2010) are examples of such policies. The structural reform policy had the goal set by the state to reduce the number of universities from 20 to 15 in Finland. This goal is recently achieved. Other key national higher education policies are to clarify profiling within and between the institutions, to improve the capacities of research specifically in the research intensive universities, to strengthen the administrative and financial autonomy of universities, to add quality assurance mechanisms to the funding systems of universities, to increase internationalisation and to speed up graduation. Other contextual factors like networks, the public and private funding available for universities, fierce competition of research funding, strengthened requirements of accountability and diversified external demands shape the strategic management at universities.

From planning to strategic development

In recent years, strategic management and strategic planning techniques (e.g. Ansoff 1980; Freeman 1984) have spread from the private sector into public higher education organisations. Despite this trend, it is inappropriate to claim that these processes or systems can exclusively affect, improve or change the academic work of universities. Universities can perform well even in cases where their management fails (e.g. Birnbaum 1988). Strategic planning is one organisational tool used to deal with a changing and uncertain environment (e.g. Freeman 1984; Mintzberg 1987; Pidcock 2001; Shattock 2010). In a university context, strategic management has a crucial role in, for example, pulling internal policies and processes together (Shattock 2010). Furthermore, imposing strategic management on universities has been found to impact on the culture by raising awareness of the need to think strategically in a competitive environment (Crebert 2000).

All organisations aspire to find a balance between their external and internal environments. Dealing with the complexity of functions, tasks and the environment is a major challenge for university management (Hölttä 1995) and, as with other organisations, it is common to find tensions related to resources, decision-making, goals, processes and structures (e.g. Harmon & Mayer 1986; Mindlin & Aldrich 1975; Scott 2003). In universities, these tensions are further related to and intensified by the complexity of the university as an organisation, the multiple goals and values of university actors, the nature of academic work (e.g. Birnbaum 1988; Clark 1983; Lammi 2003) and the university's political and economic relationships with society, particularly the increasing demands it faces to serve modern society.

In the huge body of strategic management literature, there are various views on how to deal with the environment and what to focus on. Strategic schools vary from the earlier rigid planning schools to learning and environmental schools (e.g. Mintzberg & Lampel 1999; Chaffee 1985). Strategic choices are both enabled and limited by the internal and external factors of an organisation (e.g. Freeman 1984; Dyson 2004; Mintzberg 1987; Pidcock 2001) and this is one common element found in all the several strategic schools. Strategy and strategic development are organisation-wide activities and are not solely based on the decisions of top management (Chaffee 1985). This is an important point from the perspective of the strategic development of universities. Moreover, strategic choices and strategic directions can be considered and understood through the university's external environment, but the university's internal environment cannot be ignored.

University profiles and key development areas are presumed to highlight and realise the strategic direction for the entire organisation. These are formally articulated in institutional level strategies, but are the strategies rational and conscious choices? Strategies can be divided into prescriptive and descriptive strategies. A prescriptive strategy determines what ought to be done and a descriptive strategy describes what is done. Strategies may also be mixed and contain both prescriptive and descriptive features (Mintzberg & Lampel 1999). Because of unpredictable and turbulent surrounding environments, intended strategies are supplemented by realised strategies. From this standpoint, there are two types of strategy; intended and realised (see Mintzberg 1987; Pidcock 2001).

From the perspective of *contingency theory,* strategy can be seen as a tool with which an organisation interprets its environment. Interpretations enable both intended and realised strategies and they equally important in views of the internal and external environments of an organisation. Nonetheless, the primary limitations of an organisation are often, to be found in its external environment. Contingency theory is a framework (Lawrence & Lorsch 1969) with close linkages to the environmen-

tally-oriented strategic approaches (Mintzberg & Lampel 1999). According to this theory, organisational actions and choices are limited by the external environment. Lawrence and Lorsch (1969) discovered that the most successful firms are those that are differentiated enough to deal with an uncertain and changing environment (see also Clark 1998; Shattock 2010). Following Donaldson (1995) highlights that "organizational performance is affected by the fit or misfit between the structure and the contingency". So understood, the environment of the organisation and the organisation itself are objects of strategic planning (Maassen & van Vught, 2002; Crebert, 2000).

Mintzberg (1987; Malkki 2002) argues that strategy has several meanings. The five most common definitions are: "strategy as a plan, pattern, position, perspective and ploy". Strategy as a *plan* is an intended course of action and is developed consciously and purposefully. This is a typical, but somewhat narrow view of strategy. Under this approach, strategy is to do with how leaders try to establish direction for the entire organisation (Mintzberg 1987). Strategy can also exist as a *pattern,* meaning consistency in behaviour; although, behaviour does not need to be purposeful or have any connections to the intended plans. Strategy as a *position* links an organisation to its external environment with respect to a single competitor or a number of competitors. The plan, pattern and position are prescriptive-oriented forms of strategies. Strategy as a *perspective* is a viewpoint shared by the members of an organisation. (Mintzberg, 1987.) Interestingly, shared perspective is not self-evident within universities. The nature of the university as a loosely coupled organisation supports organisational diversity and fragmentation rather than integration (Mintzberg & Rose 2003). However, the stimulation of coherence in actions and decisions can be seen as one feature of the whole strategic planning of universities (Maassen & van Vught 2002). Strategy as a *ploy* has to do with gaining a competitive advantage (Mintzberg 1987).

In the categories suggested by Chaffee (1985), strategy has different assumptions in terms of what the strategy focuses on and what is the nature of reality. A *linear planning model* focuses on the end and the means; it resembles Mintzberg's (1987) planning model. A manager of an organisation plans how to deal with competitors to achieve the goals set for the organisation. An *adaptive model* assumes that the environment is more open, dynamic and complex than in the linear model. An organisation must change with the environment rather than just deal with the environment. An *interpretive model* constructs an orientation or frames of reference that allow the organisation and its environment to be understood by diverse organisational stakeholders. (Chaffee 1985.)

Strategic development and the establishement of strategic management systems are long and complex processes when undertaken in the context of universities (Kasvio 1999; Mouwen 1997; Lammi, 2003). Each strategic school has different underlying strategic concepts and frames focusing on different assumptions and interpretations of reality. In this paper the intention of strategic development is understood as an approach to enable better integration between the university strategy, the management and the core operations of the university. This article empirically considers strategies from the internal perspective of universities, but does not bind analysis to any single strategic school.

Case study

This study explores the following questions:

1) What external and internal factors are identified in university strategies?
2) What strategic priorities are set for the university in university strategies?
3) What is the purpose of university strategy?

The first research question focuses on the environmental analysis of universities. Universities are more than ever expected to deal with diverse expectations from their external environments. Ideas of contingency theory are used here to identify crucial elements in the internal and external environments of universities when setting their strategic priorities. The second research question will shed light on key areas of development of the university. The third research question is a fundamental question related to the purpose of the strategy itself. Mintzberg's (1987) and Chaffee's (1985) approaches are used here to examine the intention of strategy.

The present study applies case study design (e.g. Yin, 2009) focusing on two different Finnish universities. This is a small scale explorative study (Yin, 2009) in order to gain familiarity with the new phenomenon of strategic development of universities in the context of Finnish university reform. The purpose is to offer tools to reflect the first steps and experiences of the university reform from the point of view of the strategic development at universities.

Detailed planning of resources was applied in Finnish universities until the end of 1980's. Therefore, the establishment of strategies is not yet a long tradition in Finnish universities. The Ministry of Education and Culture[1] places an increas-

1. The name of the Ministry of Education was changed to Ministry of Education and Culture in 2010.

ing emphasis on the strategies of universities. All universities have updated their institutional level strategies. The universities have been required to submit their updated strategy documents together with an implementation plan to the Ministry of Education and Culture for the performance agreement period 2010 - 2012. In the university specific strategies, national policy goals had to be taken into account (Ministry of Education, 2008). Thus, the university strategy is at least partly dedicated to one of its major stakeholders: the Ministry of Education and Culture. In their first strategies after the university reform universities identified their profiles and key areas of development. Moreover, there is a new element of integrating the strategic plans of universities with the processes of performance based steering.

In the performance based steering system performance negotiations take place every fourth year. In these negotiations, the university and the Ministry of Education and Culture discuss and agree on the universities' tasks, profiles and key development areas, national policy goals, quantitative targets, resources and results to be attained with the resources and improvement targets. These negotiations end with the signing of performance agreements. In the intermediate years the Ministry provides a feedback letter for each university. (Ministry of Education, 2008.) The first feedback documents were assigned in 2011.

Two Finnish universities were selected for this case study: the *University of Helsinki* (referred to hereafter as HU) and *Tampere University of Technology* (TUT). Criteria to select these case study institutions were their different academic profiles, reputation, status of legal person, size and operating funding structures. HU is the biggest multi-disciplinary university in Finland and TUT one of the major universities operating in technical study fields. HU is a public legal person university and TUT is a foundation run university. The proportion of *state funding* vs. *external funding* was 41 to 59 percent in HU and 23 to 77 in TUT in 2008 (Kota database, 2008). The major part of this external operating funding originates, however, from the state budget. The proportion of actual *enterprise funding* in external funding was 11 per cent in HU and 24 per cent in TUT. Both case universities have recently reformed their organisational structures.

The three research questions formulated will be analysed using the document data. The document data consists of pre-reform and first post-reform university level strategies of the above mentioned universities. The strategic plan "*TUT – a pioneer of technology*" is for four years 2010–2013 and at HU the strategy was approved in 2009 for the period 2010–2012. The previous strategy for TUT was established for the period 2004–2010 and at HU for three years 2007–2009. The research questions are crucial to explore also from the point of view of university management. Therefore, semi-structured interviews with the rectors of the case study universities

were conducted. For the rectors strategic management and planning are important functions (Henkel, 2002). The interview discussion topics were: current state of the strategy process in the institution; purpose of the strategies and utilisation of strategic management in the university and important internal and external factors in the environment. The strategy documents and interviews are analysed using content analysis (e.g. Krippendorff 2004; Yin 2009).

Findings

The formal structures of the strategies reviewed were similar in the case universities. The post-reform strategies were shorter (HU 2010–2012:13 pages, TUT 2010–2013: 9 pages) than the previous ones (HU 2007–2009: 30, TUT 2004–2010: 15). In HU, the first post-reform strategy started with a short description of the operating environment while in TUT the university was described in a nutshell. In the previous strategies there were longer analyses of trends in operating environments, descriptions of core tasks and current operating conditions. The structures of the strategies followed a rational type of decision-making model in both cases (Pidcock 2001).

External and internal factors

The external factors in the strategies can be categorised into economic, political, geographical and demographic environments, networks and competition. The internal factors can likewise be grouped into values, institutional profile and identity, resources and infrastructure, effectiveness of operations and institutional governance, management and leadership.

In the earlier strategies (HU 2007–2009 and TUT 2004–2010), the external factors were articulated as trends, opportunities and threats. In the first post-reform HU strategy the external factors were approached globally whereas in TUT they were more or less related to Finnish society. The global environmental factors were such as international terrorism, more tensed international political atmosphere, climate change; the rising economies of China, Russia, India and Brazil; global network economy and free movement of capital. In TUT, the external factors specified included the needs of industry and business life and key partner universities. The close contacts of TUT with business life were the basis for the existence of the university according to the rector.

In the interview data, the changed university legislation, internationalisation, competition, university's social status, reputation and national demographic features were deemed very important. Internationalisation and competition for the best researchers, teachers, students and external funding were the challenges of these universities.

The same types of internal factors were found in the pre-reform and first post-reform strategies in both case universities. One difference between them was that while there were no strategic goals concerning institutional level management in previous strategies – according to the rectors they became a priority in the post-reform strategies. HU emphasised management tools by referring to its management system, internal information systems and quality assurance system. TUT's strategy stated that its managers and leaders are required to be committed to the strategic goals, bear their responsibilities and actively improve their managerial competencies. In both cases, there were plans to establish a management system that is part of the implementation process of the Universities Act.

As internal factors the rectors emphasised a range of issues between the institutional management and academic freedom. The both rectors had a plan to make their management throughout an organisation more active. In both universities, the management is divided in accordance with the three organisational levels of the university; the central administration, faculties and departments. In TUT, management was bolstered by increasing involvement of external stakeholders. The head of the strategy planning group was an external member. A foundation model offered a chance to have a governing board consisting exclusively of external members: "Externality enhances strategic activities. In the traditional university governance model, the internal board members actively safeguard the interests of certain groups, and if they do not succeed, they make sure that other groups do not succeed, either. Therefore, the rector has to persuade people and in the worst case bargain between different groups" (TUT, rector). In HU, large size of university, multi campus and multi-discipline university implied various approaches and diversity in operating practices and management.

Universities need management and incentive structures that support the institutions to achieve their strategic goals (e.g. Mouwen 1997). Different development phases of operating units implied applying different strategic incentives that motivate the best units and also those units that need operational development (TUT rector). HU is a big multidiscipline university and it was crucial to be aware that the units apply different management concepts and have different needs and practices (HU rector). However, HU aspired to increase uniformity of management throughout the institution. Integration of teaching and research was a strategic goal under dis-

cussion; all researchers were required to teach and all teachers were required to do research (HU rector). Lack of post doc positions made competition of the researchers challenging (HU).

Internal communication and its big challenges were mentioned by both rectors. A workable communication channel from rector to deans and from deans to heads of units (HU rector) and from one organisational level to another (TUT rector) was emphasised. Heads of units were regarded as key actors in strategic development (HU rector). At TUT, the internal atmosphere among the personnel reflected both the ideas in favour of and against the university reform. At HU, the university reform did not cause big internal changes, but the legislation was believed to provide more management tools such as an independent status of employer.

Strategic priorities

Visions necessary in setting institutional strategic priorities were specified as follows:

> "The University of Helsinki is the most multifaceted institution for intellectual renewal that create new scientific way of thinking and knowledge through the internationally recognised research, teaching based on research and co-operation and transmits them in order to add well-being in the Finnish society." (HU strategy 2007–009)

> "The University of Helsinki is the most comprehensive research institution of higher education and of intellectual regeneration in Finland. It is a pioneer and a builder of the future." (HU strategy 2010–2012)

> "The technical University of Tampere is an alert university, following its time and environment and making consistent strategic analyses that direct the development in its core areas." (TUT strategy 2004–2010)

> "TUT is a significant national and international pioneer in the development of technology and a sought-after cooperation partner in the scientific community and business life." (TUT strategy 2010–2013)

Both case study universities underlined their intention to operate as independent institutions. The vision of HU stated that the university will strengthen its status among the best multidiscipline research universities in the world. In TUT, the previous vision was internally oriented whereas the first post-reform strategy is directed outside the institution.

Table 1. Priorities in the strategies (University of Helsinki, Tampere University of Technology)

HU		TUT	
2007–2009	**2010–2012**	**2004–2010**	**2010–2013**
A high-quality workplace Quality assurance Internationalisation of research and teaching Academic guidance and supervision Development of an innovation system	Interaction with society Teaching Research Personnel, management and leadership, supporting activities	Teaching using the best methods Development of foundations of scientific activities Societal development International interaction Forecasting future Responsible personnel policy	Development of research Strengthening of internationality Improvement of the quality of teaching and learning Development of leadership and management

Interaction with society was one of the major priorities in both of the case study universities. In TUT co-operation with the industry through research and development projects was highlighted while in HU interaction was articulated as carrying university's social responsibility, advocating of science and being a valued partner in interaction. Major external stakeholders of HU were identified as the state administration, business life, regions, alumni and other higher education institutions nationally and internationally.

Internationalisation was set as one of the major priorities at TUT (2010 - 2013). The university emphasised that this is a pervasive element throughout all of its operations. In HU internationalisation was a strategic goal under the priority of teaching and was likewise defined as an essential part of all activities. The natural international co-operation context for HU was Europe, but international students and personnel were recruited world-wide.

While both research and teaching were prioritised in the first post-reform strategies, TUT seemed to raise and develop its profile as a research university. In the previous strategy its focus was more on teaching. In the first post-reform strategy, inputs to basic research were also strengthened along with applied research. Strong research areas were defined to be signal processing, nanophotonics and intelligent machines. HU did not specify any key research fields in its institutional strategy. HU had a strategic choice in which academic disciplines raise their field specific priorities.

> "In this strategic period we aspire to find better ways to prioritize, mainly in a way that the departments would recognize the top areas in their field." (HU, rector)

The interviewed rectors emphasised the personnel policy as an important priority in strategic management and specifically from the point of view of change management. The specific challenge – and opportunity – for personnel policy was the aging and retirement of the big post-war generations. This challenge was expressed in various ways by the rectors: "Personnel retirement brings new opportunities to personnel policy bearing in mind that we get the right people to do the right things" (HU, rector). "For change to happen, in some cases at least, a generation change is necessary" (TUT, rector).

Development of leadership and management were mentioned as strategic priorities in the first post-reform strategies. The Universities Act was seen as a very important opportunity to change and develop university management towards strategic management. This was the case particularly in TUT. "Universities traditionally do not have management as it is understood elsewhere. The new law offers a chance for real management; so far now university management has been mainly about persuading people" (TUT, rector).

Purpose of the strategy

Strategies were no longer deemed to be documents that are forgotten after their formal approval by the university governing board. The interviewed rectors described how the nature of strategies has changed. Previous strategies were criticised for being rhetorical, multi-purpose and difficult to implement. The first post-reform strategies integrated strategic planning and the basic functions in more detail. The rectors considered very important the communication and integration of strategic work between the unit and university levels.

> "Early they [strategies] were merely lists of all good things." (HU, rector).
> "One inflammatory speech of the rector is not enough." (TUT, rector)

Some differences regarding the purposes of strategies between the case study universities were found. The big multi-disciplinary university aspired to consistency and a common development direction and the technical university to a clear direction. The informants specified the two to three most important purposes of the strategy:

- to set a clear direction and goals for all organisational levels, to define ways to attain the goals (TUT), to set a common development direction (HU)
- to act as a communication interface to internal and external actors (HU, TUT)

– to create consistency and inspiration throughout the organisation (HU)
– to respond to the initiatives of the Ministry of Education (HU)
– to promote the idea of top university (HU)
– to legitimate its existence for major stakeholders (TUT)

One can identify the correspondence of the declared purposes to the various understandings of strategy discussed before. Hence, for instance, setting a clear direction has to do with an approach to understand a strategy as a plan. Creating internal consistency was related to understanding the strategy as a pattern (HU); the top university vision was related to the strategy as a position (HU). (cf. Mintzberg, 1987.) Legitimating the existence of the institution has to do with a symbolic meaning of a strategy (Morphew & Hartley, 2006; Chaffee ,1985).

In the context of the purpose of the strategy, the informants discussed how the strategies were prepared. A top-down model (HU) and a top-down mixed with a bottom-up model (TUT) were used when preparing the first post-reform strategies as opposed to the earlier bottom-up approach at HU and a top-down approach at TUT. The TUT rector stressed the importance of the strategy process. The process was supported by the external head of a strategy group. This according to the rector raised open discussion involving a debate on difficult matters and supported the commitment by the university members.

Conclusions and discussion

The two Finnish universities chosen for this case study aspire to establish a comprehensive strategic approach and gain greater control over their external and intra-organisational environments. Nevertheless, the universities specify and describe their position in their external operating contexts (Freeman 1984; Mintzberg 1987; Chaffee 1985) in different ways. The large, multi-discipline university expresses its environmental orientation as a social mission; contributing excellence in science and being a valued partner in society. This university also analyses its external environment globally both in the pre-reform strategy and in the first post-reform strategy. In contrast, the technical university emphasises a service orientation towards business life and industry in its region. In its pre-reform strategy, the environmental challenges it faces are mainly threats and opportunities in the economic environment. The first post-reform strategy extends the strategic approach to the rapid development of science and technology, globalisation, changes in the economic structure

and international competition. In the pre-reform and first post-reform strategies, multiple groups of external and internal factors are identified in both case studies. However, it is not possible to interpret from the formal strategy documents, which specific internal and external factors apply in terms of strategic fit, as suggested by contingency theory (Lawrence & Lorsch 1969; Mintzberg & Lampel 1999).

The findings of this study suggest that the post-reform strategic development primarily concerns the fit between the intra-organisational factors. The rectors interviewed identified the necessary alignment to be accomplished between the following: the new and more active university management and academic freedom; the nature of management and different stages of development of academic units; and the diverse practices of academic units. From a management perspective, the two case study universities apply different methods to promote these fits. The technical university appears to invest in personnel-oriented leadership and the development of managerial capacities. Conversely, the multi-discipline university focuses on the management of teaching and research, and the development of management and information systems.

The case study universities have a number of strategic priorities which they identify as key development areas. A strong research profile and internationalisation are the new key areas of development of the technical university in its post-reform strategy, while the multi-discipline university emphasises management of its core academic tasks; teaching, research and interaction with society in the post-reform strategy. Improvement of competitiveness, innovativeness and performance are aspects under the strategic development in both of the case study universities. Given that the strategic process is time-confusing and difficult (Mouwen 1997) and that the strategy is expected to provide a long-term direction for the entire institution, three-year (HU) and four-year (TUT) strategic periods are relatively short. Moreover, it should be noted that changes in universities usually take place incrementally.

The results of this study highlight that the nature of strategic goals is changing toward more prescriptive, concrete and action-oriented goals in both case study universities. The strategic goals are set and organised hierarchically in the initial post-reform strategies: a strategic aim is established for each major focal area along with concrete objectives specifying how to achieve them. This is in line with assumption of strategy as a plan that sets a clear direction and goal, and which further shows how to get there (Malkki 2002; Mintzberg 1987; Chaffee 1985). In addition to setting strategic goals, the multi-discipline university also seeks to achieve more consistency in the direction of behaviour of the university actors (Mitzberg 1987; Crebert 2000). The faculties and departments identify their own internal discipline-specific priorities concerning their research. This means that the strategic goals

and strategic potential relating to research are enhanced in relevance by the fact that they stem from everyday academic work (Buckland 2009).

While study suggests that, internally, the strategy serves as a plan, communication tool and, management tool, it is the strategy formation process rather than the final strategy document that fulfils these purposes. Hence, the process is more important than the formal strategy document itself (Buckland 2009). A university is a multi-functional and multi-level organisation. When personnel of each organisational level participate in the strategy process, it allows for interactive processes that convey meanings and enhance motivation and understanding of strategic behaviour and strategic frames of references (Chaffee 1985).

The rectors interviewed states that they analyse their strategic development mostly vis-à-vis the Ministry of Education and Culture and, the university personnel. A formal strategy is always written for various stakeholders (Mintzberg & Lampel 1999); thus, the published strategy presents an official message to the external stakeholders in both case study universities. With respect to the Ministry of Education and Culture, the fits, assumed in the contingency theory, appear to apply. This study indicates that the national higher education policy goals and the institutions' strategic goals set are aligned. The universities present more detailed strategic plans to the State, although it is worth noting that the declared policy goal of the university reform is to enable more autonomy for the universities.

One important question from the viewpoint of strategic development and autonomy is whether the universities can choose their institutional profiles and priorities independently. The annual feedback letters the Ministry of Education and Culture provides to universities, during the four-year performance agreement period are examples of the mechanisms through which the Ministry controls the degree of fit between the national policy goals and realisation of university strategies. Performance-based steering has been applied since the 1990s and one of its goals is to increase freedom of action and accountability of governmental agencies in order to ensure better services and efficient use of resources (Ministry of Finance 2006). Following the university reform, performance-based steering is accompanied by policies steering the strategic development of universities. As this study shows, here are concrete strategic goals available for state steering. Within the universities the strategic steering is the responsibility of their respective governing boards. University management can, if it so prefers, also circulate certain strategic questions through the Ministry in order to gain support and legitimise the goals for implementation. If the strategy is applied in this way, its purpose is also considered a ploy (cf. Mintzberg 1987).

Development of strategic management is complex and multidimensional, particularly in the professional and loosely coupled organisations like universities. Different organisational actors apply various strategic management frames and concepts depending on which frameworks and strategic school or schools' assumptions each actor prefers. Strategic management and strategic development are new management concepts within universities, and, through them, the university actors may experience their social world differently even if it has not changed considerably (Seidl 2007; Kasvio 1999; Lammi 2003). It is crucial to investigate and understand strategic management from a range of perspectives. In the future, it is important to shed light on the roles, conceptions, interpretations and experiences of different levels of managers and leaders, personnel, students and external stakeholders. The role of middle managers, for example, is one of the most vital when implementing strategies. It is also relevant to study the wider contextual factors of universities when balancing the competing demands of various stakeholders in their strategic processes. The aforementioned are all crucial research topics. Another important research theme is strategic behaviour and the conflict between intended and realised strategies in the strategic development of an organisation. Topically, there is a need for further empirical and theoretical studies on strategic management in universities in Finland.

References

Ansoff, H. I. (1980). Strategic issue management. *Strategic Management Journal*, *1*(2), 131–148.

Academy of Finland (2010). Research Programmes. http://www.aka.fi/en-gb/A/Science-in-society/Research-programmes/. Cited 20 April 2012.

Birnbaum, R. (1988). *How colleges work: The cybernetics of academic organization and leadership*. San Francisco: Jossey-Bass.

Buckland, R. (2009). Private and public sector models for strategies in universities. *British Journal of Management, 20*(4), 524–536.

Chaffee. E.E. (1985). Three Models of Strategy. *The Academy of Management Review*, 10(1), 89–98.

Clark, B.R. (1998). *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*, Oxford: Pergamon.

Clark, B.R. (1983). *The Higher Education System: Academic Organization in Cross-National Perspective*, University of California Press: Berkley.

Cohen, M. D., March, J. G., & Olsen, J. P. (1972). A garbage can model of organizational choice. *Administrative Science Quarterly, 17*(1), 1–25.

Crebert, G. (2000). Links between the Purpose and Outcomes of Planning: perceptions of heads of school at Griffith University. *Journal of Higher Education Policy & Management*; 22(1), 73–84.

Crebert, G. & Daniel, R. (1998). "Plan or Perish: a Case Study in Strategic Planning in Australian Higher Education", paper presented in HERDSA 21st Annual Conference, July 1998, Auckland, New Zealand. http://www.herdsa.org.au/wp-content/uploads/conference/1998/PDF/LeadMgmt/CREBERT.pdf. Read 10 February 2012.

Donaldson, L. (1995). *American anti-management theories of organization: A critique of paradigm proliferation*. Cambridge: Cambridge University Press.

Dyson, R. G. (2004). Strategic development and SWOT analysis at the university of warwick. *European Journal of Operational Research, 152*(3), 631–640.

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston, Mass: Pitman.

Government bill (2009). Government bill on the new Universities Act, Finland.

Government programme (2011). Programme of Prime Minister Jyrki Katainen's
Government, Finland. http://valtioneuvosto.fi/hallitus/hallitusohjelma/pdf/en334743.pdf. Loaded 20 March 2012.

Gulbransen, M. (2005). Tensions in the research council-research community relationship. *Science and Public Policy*, 32(3), 199–209.

Harmon, M.M. & Mayer, R.T. (1986). *Organization Theory for Public Administration*. Glenview, Illinois; London, England: Scott, Foresman and Company.

Helsinki University (2006). Strategic Plan of the University of Helsinki 2007–2009. Retrieved from http://www.helsinki.fi/tutkinnonuudistus/materiaalit/strategia2007–2009.pdf

Helsinki University (2009). Strategic plan for the University of Helsinki 2010–2012. Retrieved from http://www.helsinki.fi/strategia/pdf/STRATEGIA_web.pdf.

Henkel, M. (2002). Emerging Concepts of Academic Leadership and their Implications for Intra-institutional Roles and Relationships in Higher Education. *European Journal Of Education*, *37*(1), 29–41.

Hölttä, S. (1995). *Towards the self-regulative university*. Joensuu: Joensuun yliopisto.

Kasvio, A. (1999). *Strategia Tampereen yliopistolle – Yhteiskuntatieteen näkökulma*. In Matti Mälkiä and Jarmo Vakkuri Strateginen johtaminen yliopistoissa – Ajattelutavat, mahdollisuudet ja haasteet. Tampere: Juvenes-Print. . 82–99.

Kota data base (2008). https://kotaplus.csc.fi/online/Haku.do. Cited 24 May 2009.

Krippendorff, K. (2004). *Content analysis: An introduction to its methodology* (2. ed. ed.). Thousand Oaks (Calif.): Sage.

Lammi, Katri (2003). Yliopistostrategioiden muotoutuminen. Tarkastelussa kolmen yliopiston yleis- ja kansainvälistymisstrategiat. Vaasan yliopiston julkaisuja. Tutkimuksia 248. Hallintotiede 30. Vaasa.

Lawrence, P. R., Lorsch, J. W., & Garrison, J. S. (1969). *Organization and environment: Managing differentiation and integration*. Homewood (Ill.): Irwin.

Maassen, P. & van Vught, F. A. (2002). Strategic planning. In I. Jennikens (eds.) *Management and Decision-Making in Higher Education Institutions*, Lemma Publishers, 225–240.

Malkki, P. (1999). *Strategia-ajattelu yliopiston johtamisessa. Neljän yliopiston hallituksen jäsenten käsitykset strategia-ajattelun keskeisistä alueista*. Kuopion yliopiston julkaisuja E. Yhteiskuntatieteet 75. Terveyshallinnon ja -talouden laitos. Kuopio: Kuopion yliopiston painatuskeskus.

Malkki, P. (2002). Strategia-ajattelun lähtökohtia yliopiston johtamisessa. Teoksessa: Heimoja, hengenviljelyä ja hallintoa, 95–105. Toim. Sakari Ahola & Jussi Välimaa. Jyväskylä: Jyväskylän yliopistopaino.

Mindlin, S.E. & Aldrich H. (1975). Interorganizational Dependence: A Review of the Concept and a Reexamination of the Findings of the Aston Group. *Administrative Science Quarterly,* 20(3), 382–392.
Ministry of Education and Culture (2011). Development Plan for Education and Research 2011-2016. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2012/liitteet/okm01.pdf?lang=fi
Ministry of Education (2009). Steering and funding of universities from year 2010 forward.. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Koulutus/yliopistokoulutus/hallinto_ohjaus_ja_rahoitus/yliopistojen_tulossopimukset/Sopimukset_2010_-_2012/ohjeet_/RV_14102009_OPMa_muistio.pdf
Ministry of Education (2008). Instructions for the performance negotiations in 2009. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Koulutus/yliopistokoulutus/hallinto_ohjaus_ja_rahoitus/yliopistojen_tulossopimukset/Sopimukset_2010_-_2012/ohjeet_/YO_ohjekirje_2009.pdf
Ministry of Education (2007). Opetusministeriön tilinpäätöskannanotto Tampereen yliopiston vuoden 2006 toiminnasta. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Koulutus/yliopistokoulutus/hallinto_ohjaus_ja_rahoitus/kirjallinen_palaute/Tilinpaatoskannanotot_v._2006/TaY.pdf
Ministry of Education and Culture (2011). Development Plan for Education and Research 2011-2016. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Koulutus/koulutuspolitiikka/asiakirjat/Kesu_2011_2016_fi.pdf. Read 10 February 2011
Ministry of Finance (2006). *Handbook of performance management*, Ministry of Finance, public management department, 2/2006. Helsinki: Edita.
Mintzberg, H. & Lampel, J. (1999). Reflecting on the Strategy Process. MIT *Sloan Management Review*, 40(3), 21–30.
Mintzberg, H. (1987). The Strategy Concept 1: Five Ps for Strategy, California. *Management Review*, 30(1), 11–24.
Mintzberg, H. & Rose, J. (2003). Strategic Management Upside Down: Tracking Strategies at McGill University from 1829 to 1980. *Canadian Journal of Administrative Science*, 20(4), 270–290.
Morphew, C.C. & Hartley, M. (2006). Mission Statements: A Thematic Analysis of Rhetoric Across Institutional Type. *The Journal of Higher Education*, 77(3), 456–471.
Mouwen, K. (1997). Implementing Strategy in Higher Education. *Tertiary Education and Management*, 3(4), 293–297.
Mälkiä, M. & Vakkuri, J. (1999). *Strateginen johtaminen yliopistoissa – Ajattelutavat, mahdollisuudet ja haasteet*. Tampere: Juvenes-Print.
Pidcock, S. (2001). Strategic Planning in a New University. *Journal Of Further & Higher Education*, *25*(1), 67–83.
Rumelt, R. P., Schendel, D., & Teece, D. J. (1991). Strategic management and economics. *Strategic Management Journal*, *12*(S2), 5–29.
Scott, W. R. (2003). *Organizations : Rational, natural, and open systems* (5. ed. ed.). Upper Saddle River (N.J.): Prentice Hall.
Seidi, D. (2007). General strategy concepts and the ecology of strategy discourses: A systemic-discursive perspective. *Organization Studies (01708406), 28*(2), 197–218.
Shattock, M. (2010). *Managing successful universities* (2nd ed.). Berkshire, England: McGraw-Hill.

Tampere University of Technology (2010). "*TUT – a pioneer of technology*" 2010–2013. Retrieved from http://www.tut.fi/idcprod/groups/public_news/@l102/@web/@p/documents/liit/p010029.pdf

Tampere University of Technology (2004). Tampereen teknillisen yliopiston strategia – tekniikan tiedeyliopisto 2004-. Printed version.

West, A. (2008). *Being strategic in HE management*. Perspectives, 12(3). 73–77

Yin, R. K. (2009). *Case study research: Design and methods* (4. ed. ed.). Thousand Oaks (Calif.): Sage Publications.

Chapter 5

Path towards merger – the merger process of University of Eastern Finland

Jarkko Tirronen

Introduction – the origin of merger process

Finnish university system was undergoing a significant structural reform at the beginning of the 2000´s. Universities faced a Pan-European challenge of modernisation of higher education (see e.g. COM, 2006; Maassen, 2006). In Finland structural development related especially to system challenges; amount of universities and higher education institution, insufficient level of internationalisation and to dispersed resources and overlaps between universities and disciplines (e.g. OECD, 2006; Academy of Finland, 2009; Veugelers, 2009). These challenges required reorganising of resources, enhancement of strategic steering and differentiation of universities, faculties and departments. A paradigmatic turn from Welfare University, which emphasised university as a state institution, into Post-Welfare University, which emphasises university as an autonomous institution in a competitive environment, was taking place. Globalised knowledge based society and new economy required a novel way to organize and governance of university.

Policy reform started in 2005, when Finnish Government decided on structural development of Finnish research system and stated that strategic aim is to strengthen internationally competitive advantage of universities (Finnish Government, 2005). According to the statement university system was no longer planned to be expanded and resources should be merged into larger and more effective units. Government's

decision opened a window for structural development in spring 2006, when Ministry of Education (MoE) published a memorandum of principles for structural development. MoE aimed to strengthen the competitive advantage of universities by merging units and resources into focus areas. (Ministry of Education, 2006.) MoE encouraged universities into structural development principally by emphasising bottom-up approach and by funding the selected projects. In spring 2006 MoE called for plans of structural development from all Finnish universities and selected three projects as national priority projects. One of these was the cooperation project between University of Joensuu and University of Kuopio, which finally resulted in University of Eastern Finland (UEF). In this article I aim to answer how the path towards merger was structured.

Analytical framework and the merger process

Mergers in higher education have been studied from different perspectives in past two decades (e.g. Goedegebuure, 1992, Samels, 1994, Skodvin, 1999, Harman, 2000, Kyvik, 2002, Harman & Harman, 2003, Lang, 2002, 2003). UEF merger included some typical features of merger. It was a combination of bottom-up and top-down processes (cf. Skodvin, 1999) and also a semi voluntary merger. Universities were not forced to merge, but the need to reform was acknowledged. UEF merger consisted of both government and university level interests. Government steered at distance and emphasised bottom-up approach in planning of the process. Merging universities were 'entrepreneurial' in creating new pathways in adapting to changes of operating system (c.f. Clark, 1998; Sporn, 2001). Government emphasised economics of scale and launched structural development process which was subsidised by significant incentives (cf. Lang, 2002).

UEF merger was a strategic in nature; a respond to changes in external environment. Universities aimed to enhance mutual competitive advantage by merging resources. Merger was aimed to strengthen the position of universities in global higher education market (cf. Skodvin, 1999; Tirronen & Nokkala, 2009). It was a complementary merger, in which two nearly similar sized universities with different academic profiles merged together (cf. Harman, 2000). It diversified the academic profile of new university (cf. Skodvin, 1999). UEF merger was also a consolidation, where existing administrative, organisational and academic systems were dissolved (cf. Harman & Harman, 2003) and a new university, which has new organisation, faculty structure, administration, management and decision making systems was

reconstructed. Merger offered two primary benefits: economics of scale (critical mass, comprehensiveness) and synergy benefits (reorganisation of resources).

UEF merger was studied in real-time, as the process was progressing. The theoretical roots of process theory and evaluation are in historical sociology, particularly in event-history analysis. The core idea of event-history analysis is to explain change by focusing on sequence of events, and especially to certain significant events, which reinforces the path towards a particular goal (f.e.g Haydu, 1998; Tilly, 2002; Pierson, 2004). Change is analysed through significant turning points, which can be path dependent. The hypothesis is that these turning points are in significant role in the gradual lock-in of merger. The theory of path dependence is applied in analysing the gradual progress of process (cf. Mahoney, 2000, 2004; Pierson, 2000). According to theory of punctuated equilibrium change is gradual, in which long periods of stability are punctuated by short periods of radical change (Baumgartner etc., 2006). In this article I aim to answer how change is structured and how events are interrelated. Additionally it needs to be evaluated what are the breaking points that launched change process, and what events were significant in path towards merger. (Yamaguchi, 1987; Kingdon, 1995; Box-Steffensmeier, & Jones, 1997; Clemens, 2007.)

Unlike most of the merger studies, which have been retrospective, this study was process research study, in which research was implemented along with the merger process. In this article I aim to find out the temporal evolution of university merger and answer how the merger process progressed. Aim is to illustrate and analyse merger process and to find out how merger path was locked-in.

Article is based on process evaluation of the merger process (Tirronen, 2008, 2011). Evaluation was implemented with the methods of process research and engaged scholarship (Van de Ven, 2007; Van de Ven etc., 2008). Data consisted of documentation of UEF merger process, which was complemented with thematic interviews of key UEF actors. The objective of process research was to constitute a narrative or event structure of merger and identify the significant turning points on the basis of document material. After the 'storyline' was finished I 'engaged' myself with key persons of university merger. The aim of this engaged scholarship was to open up the black boxes that were left after document analysis. (cf. Van de Ven, 2007; Van de Ven etc., 2008.) Evaluation was focused on merger process from initiation of cooperation to the implementation of merger. Evaluation was executed in three phases during years 2008-2010, most of it in real time as merger process progressed.

Structure and content of merger – gradual development

UEF merger process was punctuated by four major stages: 1) initial phase, where project proposal was prepared, 2) development phase, where cooperation was planned 3) project phase, where the actual guidelines and aims of cooperation was decided and 4) implementation phase, where merger was implemented in practice. This included 12 events of which five can be considered as turning points (see fig. 1 & table 1).

Initial phase – preparing the proposal

As noted ahead, UEF merger started as a part of national structural development program, when MoE called for plans of structural development. This event can be considered as first event in UEF merger process. It opened the window of possibility for structural development and launched the gradual process. Universities searched at start for 'margin' conditions that would meet the interests between the cooperating universities and between universities and MoE. Cooperation was aimed firstly to receive degree granting status in economic sciences and secondly to adapt changes in external environment. At starting point degrees in economic sciences was admitted by Lappeenranta University of Technology. Arrangement was not functional from the perspective Kuopio and Joensuu, since the outputs (e.g. qualifications) were considered as results of Lappeenranta (Universities received degree granting status in February 2008). Thus universities connected cooperation and degree granting status together and endeavored by this way to achieve the status as a national structural development project.

Initial situation for structural reorganisation was favorable: universities were nearly complementary in terms of academic disciplines, universities and MoE committed on project and UEF process was parallel with national policy aims. At initial phase the idea of UEF was build around economic sciences. Universities proposed a strategic alliance, where two independent universities collaborated in four fields. Universities planned to establish a double faculty in economic sciences, boost cooperation in social sciences, establish a single management group, review cooperation for example in data administration, student recruitment, student counselling, financial and personnel administration and in support services for research. The second event of UEF merger (see table 1) was the structural development plan prepared by

universities. This event broke down the established equilibrium of two independent universities and steered universities towards each other.

However first proposal was still a plan of intent and was not compatible with national structural policy aims. MoE and rectors of Joensuu and Kuopio negotiated on aims of the project and MoE advised that universities should redefine project proposition and intensify cooperation. Negotiation can be considered as third event in change process and was a turning point in chain of events, since it launched the progression of process towards structural cooperation. In redefined project proposition, two independent universities planned to establish a federation. Universities planned also to settle out the possibilities of cooperation in natural sciences, in all social sciences and in other disciplines. Also regulations were aimed to harmonise. Thus redefined proposal was aimed further compared to original one. It included more areas of cooperation and the idea of structural cooperation. Idea of loose cooperation developed through the negotiation into structural federation (cf. Van de Ven etc., 2008), which also met the MoE requirements for structural development project. Redefined plan was a fourth event in process towards UEF. This event changed the course of process and also closed the period of initiation and represented shift towards second major stage: development phase.

From idea to plan – the development phase

MoE selected project as national priority project in October 2006 and appointed planning group, Vihko group, to prepare university cooperation. In this article the working group is abbreviated as Vihko group, after the chairman of the group professor Reijo Vihko. Appointment of Vihko group signified a shift into next phase in development phase (c.f. Van de Ven etc., 2008), where the direction of process was gradually locked-in. Working group was expected to:

- put forward a proposal for a common operational structure taken as far as possible within the framework of the educational responsibilities of these two universities:
- draw up on implementation plan, including timetables; and
- determine the constituent projects needed to this and their operational aims and economic impacts' (Ministry of Education 2007).

Ministry of Education selected altogether three national projects. Two other were merger of the Helsinki School of Economics, the University of Art and Design and

the Helsinki University of Technology (Aalto University) and merger of University of Turku and Turku School of Economics (University of Turku). As MoE selected UEF project as national leading project, the content of structural cooperation was beginning to clarify.

The work of Vihko group was bottom-up driven. Planning work was executed by sectoral sub-groups, in the various fields of administration, social sciences, natural sciences and in economic sciences. Vihko group, which consisted of the core leaders of universities and few external members, compiled the report and decided on comprehensive solutions. Vihko report was published on February 2007 and it included a more focused idea of structural collaboration (see table 1). Vihko report concluded that organisational structure of new university will be based on federation model, which consisted of two independent member universities that will have joint and separated operations. University will have joint administration, both in the levels of federation and in member universities, joint decision-making system and rectors, authority in funding steering, human resources and in strategic management. Federation has two joint faculties in the fields of economic and social sciences. In natural sciences focus was directed mainly into research and teaching collaboration. However most of the faculties was considered as independent and remained under commission of member universities.

The focus of academic collaboration was aimed to overlapping disciplines, especially those in natural and social sciences. Vihko group decided also on the allocastion principles of project funding. Majority of the funding was planned to aim sectoral academic projects, particularly to the fields of natural and social sciences. Strategic aim was to search for academic synergies, enhance added value and create possibilities for structural development. Vihko group agreed on minimum requirements for structural development, and was a sixth event in event structure of UEF. Path toward structural cooperation was locked.

MoE and universities negotiated on Vihko report in March 2007 in pursuance of annual performance negotiations. Merger was on negotiation agenda, but as a result of negotiations MoE decided to allocate 11 million Euros on federation project for the years 2007–2010. Negotiations can be considered seventh event and as the second turning point in the path towards merger. Universities were attached more closely to each other with funding element which thus reinforced the commitment to the project. This event closed the path for structural cooperation and indicated a turn into a third major stage in process: the project phase.

Organising the project – blueprints of merger process begins to emerge

The work of Vihko group was critical pre-project phase in the transition to the project phase. At the project phase the development plan was transferred gradually from blueprint into reality. This process started on May 2007, when university boards of Joensuu and Kuopio approved the mutual agreement of federal university and selected project management. Overall authority of project was given to management group, which consisted of rectors and director of administrator of both universities. Mutual agreement can be considered as the eight event in the UEF process, which indicated the stabilization of path dependency towards merger.

UEF project was prepared bottom-up in over 20 working groups, of which most of was appointed by UEF management group in June 2007. At this stage the aim of project was to build up a federal university. However the development plan was still uncompleted and the cooperation process was in progress. Shortly after the start of project rectors and directors of administration of both universities, negotiated informally in summer 2007 for the future of the project. As a result of negotiations the aims and strategy of process changed significantly. It was mutually agreed that federation would not offer a realistic basis for cooperation in the near future and its effects on structural development would be unclear. This internal negotiation was the ninth event and third turning point towards merger. It indicated a shift from federation into merger and reinforced the path dependency.

Negotiation launched preparations for organisation structure of new university in autumn 2007.

Organisation structures were planned during the fall 2007 and the idea of federation was replaced with the merger model. According to organisational plan new university would comprise 3-6 faculties, as universities of Joensuu and Kuopio had altogether 13 faculties. The structural turn aim was to ensure critical mass in terms of diversity of disciplines, number of staff and the size of units.

The final proposition of organisation and faculty structure of UEF consisted of 4 faculties and joint administration unit. University boards discussed of proposition of organisation structure in March 2008 and approved proposition of structure in April 2008, only a year after project was started. The path towards merger was finally locked in and new equilibrium started to emerge. Obviously this decision was significant event in the merger process and it can be defined as fourth turning point of process. (see table 1.)

Right after the board decisions, UEF management group appointed persons in charge and coordination groups to plan faculties substructures in spring 2008.

Coordination groups were obligated to prepare a proposal of department and administration structure. University boards approved department proposal in November 2008. According to decision new university has four faculties, 20 departments, four research units and 2 teacher training schools. Faculty and department level administration is centralized into four faculty based administration service centers. Faculty and department structure preparation went through without any major tensions.

The art of merger – implementation

UEF process turned from project phase into implementation phase in August 2009, when new university board of UEF was selected and rectors nominated. This was the eleventh event of UEF process and fourth turning point in process. By this decision the power structures were determined and thus created a possibility for implementation of merger. The development perspective was UEF-centred, even though some issues (especially those related to strategy, administration and education issues) included certain tensions between Joensuu and Kuopio campuses. The most important event was the decision of UEF strategy and its implementation plan in March 2010. This was the twelfth event and fifth turning point in UEF process. It defined the strategic direction of UEF and locked the aims of implementation. Strategy was implemented by focusing resources into strategic areas and projects, reorganising educational and administrative structures, by merging study programs, removing overlaps in administrative operations and redirecting personnel resources into strategic areas.

Implementation of merger was a fairly easy process, since the academic profiles of merging universities with few exceptions in the natural and social sciences were almost complementary. The challenges of merger related mostly on situations, where merging universities were supposed to achieve consensus, mutual aims and solutions. These questions related especially to overlaps in education and administration, to reorganising of power and resources and to differences in academic and administrative operation cultures. Actors acted differently and the acting was guided by different background histories. The art of merger is something which is done between the various social contexts between merging partners. Thus merger is a matter of trust and confidence.

Structural development was a challenging process and some of the overlaps remained to be solved in the second phase of implementation. This supports up the

hypothesis that mergers, like other large-scale organisational processes, are difficult social processes, which are implemented in multiple stages.

Discussion

Landscape of Finnish university system was under great structural reform pressures in the early 2000`s. UEF merger was a part of national policy program, which aimed to reorganise dispersed resources of higher education policy and to enhance the competitive advantage of universities. This was a convergent aim with the aims pan-European process of modernisation of universities (see e.g COM, 2006; Maassen, 2006). According to event structure theory, events can be utilised in explaining the progression of particular change. In UEF case events produced rather coherence than chaos. In general UEF process followed a developmental pattern which is typical to change processes (f.e.g Rogers, 2003; Van de Ven etc., 2008). Linear model is a generalisation and it is supposed to describe the overview of change process. However processes do not follow uniformly a linear sequence, but rather processes are dependent on a complex and conflicting socio-cultural environment.

UEF change process and the dynamics of merger process are illustrated in figure 1. Figure highlights the gradual progress of merger in two axes. Vertical axis describes the gradual progress of mode of cooperation, from strategic alliance into merger. Horizontal axis represents event chain of the merger project. Steering of MoE was mostly steering at a distance, or arms-length steering. MoE encouraged universities taking an active role in the merger process. Merger was in many parts university-driven and widely accepted in universities, even though merger process was in line with the interests of MoE. Top-down and bottom-up processes were successfully implemented along the process.

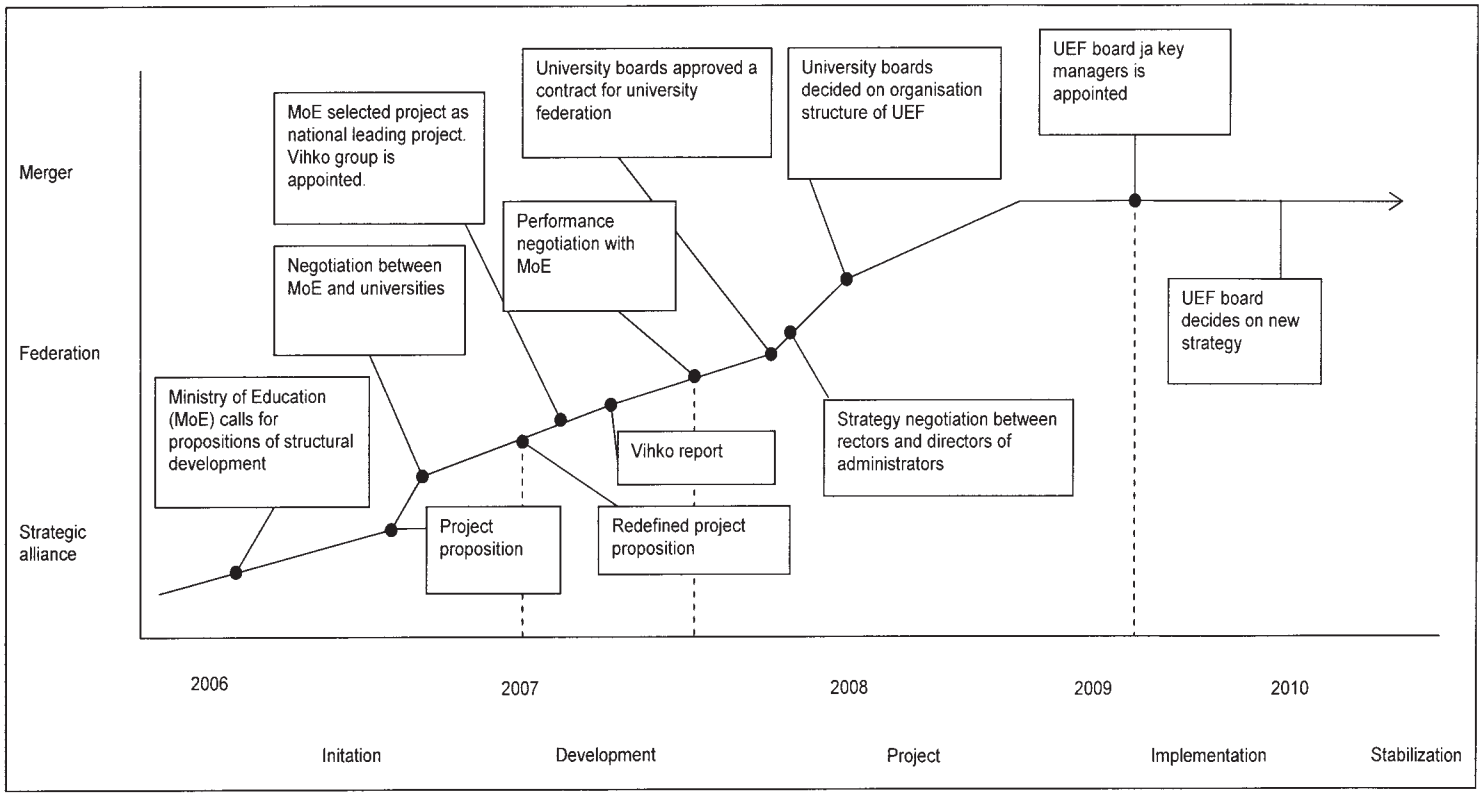


Figure 1. Dynamics of merger process and the sequencing of events.

UEF process progressed in multiple stages, incrementally and it was sequenced by set of events. The UEF process divided into four major stages: 1) initiation, 2) development, 3) project and 4) implementation. These included 12 events, of which five (bolded in table 1) can be considered as significant turning points. UEF merger indicated that turning points speeded up the progression of process. These events reinforced the path dependency of mutual cooperation. Path towards merger was cumulative and progressive and the pivotal decisions were made in multiple stages. However decisions were made in closed context and relatively small amount of key persons determined large-scale decisions, which have long time effects on great number of people.

University is socio-cultural institution, which is constructed by the idea of professional autonomy and identity. Hence issues like merger, which includes reorganisations in strategy, structures, resources and power elites, can stimulate conflicts. Management of merger process requires therefore a continuous ability to balance between conflicting interests of academics. Successful merger focuses on individuals, sensitivity, confidence, commitment and personal interaction. Consensus is not always the best solution or even practice in mergers. Merger consists from decisions, which may have negative effects in some contexts. But in university mergers, it is a significant priority that the decisions have to be made quickly and scheduled and the implementation has to be rooted to the management system of university, which recognizes the academic freedom and nature of academic work. University mergers are continuous balancing between top-down and bottom-up cultures. UEF merger highlighted the policy aims, which were common also for higher education institutions around the globe in the early 2000´s. It was recognized that modernisation of governance and management of university is a crucial for institutional competitive advantage. Universities must create more "entrepreneurial" culture and achieve critical mass of research and teaching.

Table 1. (on the right) Event chain analysis
In table I have applied a model created by Andrew Van de Ven and colleagues 2008 to which I have added one supplementary dimension, meaning, by which I want to describe the idea of individual event. Highlighted events are to be considered as turning points of the UEF process

Event	Idea	Participants	Context	Result	Process	Meaning
Call for plans (2006)	Structural development	Officials of Ministry of Education	Open context, aimed to all universities	Ministry of Education requests for plans	Ministry of Education requested, universities prepared	Window of possibility for structural development opened. Launched the process
Plan (2006)	Degree granting status in economic sciences	Top management of university and university boards	Limited context	Plan	Top management negotiated and prepares, university boards decided	Established equilibrium was broke down
Negotiation between Ministry of Education and top management of universities (2006)	Minimun conditions of cooperation	Top management of university and officials of Ministry of Education	Closed	Request to redefine project plan	Top management of university and officials of Ministry of Education negotiated	Turning point launched the progression of process
Redefined project plan (2006)	Specifying the cooperation model	Top management	Closed	Mode of cooperation changed from strategic alliance into strucural cooperation (federation)	Top management negotiated and prepares, university boards decided	Course of process changed
Ministry of Education selects plan as national leading project (2006)	Obligation to structural development	Officials of Ministry of Education	Closed, state-level decision	Planning group was nominated	Universities proposed, Ministry of Education selected	Course strengthened
Vihko group (2006-2007)	Minimum requirements for structural development	Vihko group (top management, academics from different disciplines, administrators)	Open context, academics and administrators prepares	Federal university, cooperation intensified significantly	Appointed subgroups prepared, Vihko group compiled report and submitted it to Ministry of Education	Path toward structural cooperation is locked
Annual performance negotiations between Ministry of Education and universities (2007)	Funding agreement, commitment on project	Top management of university and officials of Ministry of Education	Closed	Ministry of Education decided to fund project	Top management of university and officials of Ministry of Education negotiated	Turning point, conditions for merger are made
University boards approves a contract for university federation (2007)	Agreement on principles and procedures of federation	Top management and university boards	Limited context	Project begun	Directors of administrators prepares and university boards decided	Path dependency of merger strenghtened
Strategy negotiation between top management (2007)	A shift from federation to merger	Top management	Closed	Merger process started, preparation of new university structures	Top management negotiatds, university boards were aware of process	Turning point, course changed
UEF structure decision (2008)	Merger decision	University boards	Limited context	University boards approved faculty and administration structure of new university	Directors of administrators prepared and university boards decided	Turning point, Path is locked in, new equilibrium is emerging
UEF board and rector selection (2009)	Determining power structures	University collegium, university board, rectors	Limited context	University collegium selected board, board selected rectors and deans	University collegium prepared and decided board prepares and decides, rector prepares and board decides	Turning point, creating conditions for implementation of merger
Strategy decision (2010)	Strategic aims of UEF are set	University board, rectors, deans, partially department managers	Limited context	University board approved new strategy	Rector prepared, university board decided	Turning point, strategic aims of UEF are decided

UEF process was highly complicated process, which progressed gradually from strategic alliance into merger. Merger unfolded in relatively short period and was divided by turning points. These highlighted the gradual change of process, in which the path of equilibrium was broken and the path towards new equilibrium was emerging. It is significant to assess how to exceed the psychological threshold in regard with merger. Thus the progress of culturally and socially complex process and the positive attitudes towards merger could be advanced. The lifespan of merger processes are typically long and UEF process has lasted over 5 years and yet the process is still on progress. The stabilization of change and building of new university takes for years.

References

Academy of Finland. (2009). *The state and quality of scientific research in Finland*. (Publication of the Academy of Finland 9/09). Helsinki: Academy of Finland.

Baumgartner, F. R., Green-Pedersen C., & Jones B. D. (2006). Comparative studies of policy agendas. *Journal of European Public Policy*, 13, 959–974.

Box-Steffensmeier, J. M., & Jones B. S. (1997). Time is of the essence: event history models in political science. *American journal of political science,* 41, 1414–1461.

Clark, B. R. (1998). *Creating Entrepreneurial Universities: Organizational Pathways of Transformation.* Oxfor,: Pergamon-Elsevier.

Clemens, E. S. (2007). Toward a historicized sociology: theorizing events, processes, and emergence. *Annual review of sociology*, 33, 527–549.

COM. (2006). Communication from the commission to the council and the European Parliament. Delivering on the modernisation agenda for universities: education, research and innovation.

Retrieved from http://www.go8.edu.au/_documents/university-staff/events/2008/cost-and-compacts/european_commission-delivering_on_the_modernisation_agenda_for_unis.pdf

Ebbinghaus, B. (2005). Can path dependence explain institutional change? Two approaches applied to welfare state reform. MPIfG Discussion Paper 05/2. Max Planck Institute for the Study of Societies. Cologne.

Finnish Government. (2005). *Valtioneuvoston periaatepäätös julkisen tutkimusjärjestelmän rakenteellisesta kehittämisestä*. [The principle decision of Finnish Government on structural development of public research system]. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Tiede/tiede_ja_teknologianeuvosto/erillisraportit/liitteet/periaatepaatos_2005.pdf

Goedegebuure, L. (1992). *Mergers in Higher Education: A Comparative Perspective*. Utrecht, Centre for Higher Education Policy Studies (CHEPS).

Harman, G. (2000). Institutional Mergers in Australian Higher Education since 1960. *Higher Education Quarterly,* 54, 343–366.

Harman, G., & Harman, K. (2003). Institutional Mergers in Higher Education: Lessons for International Experience. *Tertiary Education and Management,* 9, 29–44.
Haydu, J. (1998). Making use of the past: time periods as cased to compare and as sequences of problem solving. *American Journal of Sociology*, 104, 339–371.
Kingdon, J. W. (1995). *Agendas, alternatives, and public policies*. Second Edition. New York, HarperCollins College Publishers.
Kyvik, S. (2002). The Merger of Non-university Colleges in Norway. *Higher Education,* 44, 53–72.
Lang, D. W. (2002). There are Mergers, and there are Mergers: The Forms of Inter-institutional Combination. *Higher Education Management and Policy,* 14, 11–50.
Lang, D.W. (2003). *A Comparative Study of Mergers as Instruments of Reform in Higher Education*. Paper presented at the Presented to the Reform of Higher Education in Six Countries International Workshop, Centre for Policy Studies in Higher and Training, University of British Columbia, August 14-15, 2003, Vancouver, British Columbia. Retrieved from http://www.chet.educ.ubc.ca/pdf_files/pdf_Langpaper.pdf
Maassen, P. (2006). *The modernisation of higher education: a multi-level analysis*.
Paper to be presented at the Directors General Meeting for Higher Education
Helsinki, 19-20 October 2006. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Tapahtumakalenteri/2006/10/eu_19_2010a/Maassen_background_paper_DGHE_Helsinki_Oct2006_241006.pdf
Mahoney, J. (2000). Path dependence in historical sociology. *Theory and Society,* 29, 507–548.
Mahoney, J. (2004). Comparative-historical methodology. *Annual Review of Sociology,* 30, 81–101.
Ministry of Education. (2006). *Korkeakoulujen rakenteellisen kehittämisen periaatteet*. (Keskustelumuistio 8.3.2006. Opetusministeriön monisteita 2006:2). Helsinki: Opetusministeriö.
[Principles of Structural Development of Higher Education Institutions. Reports Memoranda of the Ministry of Education, 2006: 2. Helsinki]. Retrieved from http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2006/liitteet/opm_31_Korkeakoululaitoksen_rakenteellinen_kehittaminen.pdf?lang=fi
Ministry of Education. (2007). *Itä-Suomen yliopisto - tulevaisuuden yliopisto ajassa*. (Opetusministeriön työryhmämuistioita ja selvityksiä 2007:15). Helsinki: Opetusministeriö. [The University of Eastern Finland – The Future University Today. Reports of the Ministry of Education, 2007: 15. Helsinki] Retrieved from http://www.minedu.fi/OPM/Julkaisut/2007/Ita-Suomen_yliopisto_-_tulevaisuuden_yliopisto_ajassa.html?lang=fi
Ministry of Education. (2008). *Korkeakoulujen rakenteellisen kehittämisen suuntaviivat vuosille 2008–2011*. Helsinki: Opetusministeriö. [Outlines for the structural development of Higher Education Institutions for 2008–2011].
OECD. (2006). *Thematic review of tertiary education: Finland: country note*. Paris, OECD.
Pierson, P. (2000). Increasing returns, path dependence, and the study of politics. *American Political Science Review,* 94, 251–267.
Pierson, P. (2004). *Politics in time. History, institutions, and social analysis.* Princeton & Oxford, Princeton University Press.
Rogers, E. M. (2003). *Diffusion of innovations.* Fifth Edition. New York, London, Toronto & Sydney, Free Press.

Samels, J. E. (1994). Higher Education Mergers, Consolidations, Consortia, and Affiliations: A Typology of Models and Basic Legal Structures. In J. Martin & J. E. Samels (Eds.), *Merging Colleges for Mutual Growth. A New Strategy for Academic Managers* (pp. 22–41). Baltimore & London: The Johns Hopkins University Press.

Skodvin, O.-J. (1999). Mergers in Higher Education – Success or Failure? *Tertiary Education and Management,* 5, 65–80.

Sporn, B. (2001). Building Adaptive Universities: Emerging Organisational Forms Based on Experiences of European and US Universities. *Tertiary Education and Management,* 7, 121–134.

Tilly, C. (2002). Historical analysis of political processes. In J.H. Turner (Eds.), *Handbook of sociological theory* (pp. 567–588). New York: Kluwer Academic/Plenum Publishers.

Tirronen, J. (2008). *Itä-Suomen yliopistohankkeen prosessiarviointi I.* [Process evaluation of project for the University of Eastern Finland I]. Kuopio, University of Kuopio

Tirronen, J. (2010). *Itä-Suomen yliopistohankkeen prosessiarviointi. Osat II ja III.* [Process evaluation of project for the University of Eastern Finland. Part II and III]. Publications of the University of Eastern Finland. General Series 2. Kuopio: University of Eastern Finland.

Van de Ven, A. (2007). *Engaged scholarship. A guide for organizational and social research*. Oxford, Oxford University Press.

Van de Ven, A., Polley, D. E., Garud, R., & Venkataraman, S. (2008). *The innovation journey.* Oxford, Oxford University Press.

Veugelers, R. (chair) (2009). *Evaluation of the Finnish national innovation system – full report*. Helsinki: Ministry of Education and Ministry of Employment and Economy.

Yamaguchi, K. (1987). Event-history analysis: its contributions to modeling and causal inference. *Sociological theory and methods,* 2, 61–82.

Chinese higher education systems

Chapter 6

Unfinished business: Integrating Chinese and western ideas of a university

Rui Yang

Introduction

Starting from the establishment of colonies by European states since the late 15th century, the West has come to the non-Western world with immense prestige. With this the university has arguably been the most successful Western export in human history. Asia is no exception. In adapting primarily Western models, Asian universities have also accepted underlying Western values that may not accurately reflect their own culture and traditions (Altbach, 2001). The globally popularised Western concept of a university has greatly contributed to the centre-periphery divide. The European-North-American university model has never been tolerant towards other alternatives, leading to inefficacy of universities in non-Western societies. This is also the case in China. Rather than a continuity of traditional Chinese higher learning institutions, modern university system was a borrowed concept from overseas during late Qing dynasty. It was, at its very best, a body only, while the essence of modern universities-creativity and innovation-was lacking. While it is not a surprise that the Western transplant has never grown well on the Chinese soil, it is truly surprising to see how little attention has been paid to the mismatch between the strikingly different even fundamentally conflicting sides of the arranged marriage.

China's rich educational traditions have been well documented in both Chinese and English literature. Gao (2008) and Yu (2003) point out the clear value orientation of traditional Chinese educational practice designed to be exclusively centred on moral indoctrination and aimed only at fostering "sages and gentlemen." Educational thought paid attention only to social adaptation (Yao, 2000). Schooling in imperial China reflected social class background to a very great extent to ensure stability. It was used for highly conservative maintenance purposes, not to promote social change (Gutek, 2006; Bastid, 1987). Although private schools existed, the focus of most schooling in China was on the preparation of the sons of the elite for the imperial examination (McMullen, 1988; Wu, 1989; Lee, 2000). Throughout imperial Chinese history, emperors were regarded as the grand patrons of education, frequently paying formal visits to the national university, issuing edicts for the establishment of schools. This was largely due to Confucius who was honoured as the "first teacher" (Sprenger, 1991). Education served a very pragmatic purpose-the creation of individuals who would be able to ensure better government.

Confucian philosophy worked well for most of its history to produce aristocracy of intellect (Reagan, 2000). But it could only do so when China was in isolation from the Western world. Its "this-worldly," in contrast to the "other-worldly" focus of Western, philosophical thought has been negatively viewed (Cleverley, 1991, p. 7). The impact of the Confucian cultural thinking is particularly profound on higher education (Jullien, 2004; Hayhoe, 1996). The alliance between education and politics has survived dramatic social and cultural changes, and remains deeply rooted in the Chinese society, contributing to China's failure to establish a modern higher education system to serve the nation effectively and holistically on all major social, cultural and economic fronts (Yang, 2011). Such strikingly different cultural roots and heritages have led to continuous conflicts between the traditional Chinese and the imposed Western ideas of education. While the Chinese education system has been fundamentally operated within the traditional mode of thinking, the Western concept of education has been taken by the Chinese for its usefulness. This stiff mix has rarely been questioned thoughtfully. Internationally, contemporary studies of higher education have overwhelmingly portrayed the powerful influence of economic and political realities, while ignoring cultural dimensions.

This chapter adopts the lens of traditional Chinese cultural thinking to offer an alternative perspective to look at China's higher education reform and development. It demonstrates a different historical trajectory of higher education development that resulted from the traditional Chinese way of thinking. It argues that China's higher education traditions do not coexist easily with the globally dominant European-North American university model. Believing that universities are culturally

embedded, it shows that it is erroneous to treat them as the same entity in various cultural contexts. By examining the tensions in the interactions in higher education between the traditional Chinese and the imposed Western modes of thinking, it reveals the various extents to which layers of Chinese higher education have achieved differently, and points out that China's strong catch-up mentality in its contemporary higher education policies is only responsive, rather than based on systematic understandings of cultural roots. Chinese universities are therefore insufficiently critical towards the European-American model and its variants. It then warns that without an infusion of traditional education values, universities in China risk losing touch with their cultural contexts in their quest for world-class status.

Historical roots of Chinese higher education

People of different cultures think differently. According to Nisbett (2003), independent and interdependent thinking are allied respectively to people of North American and East Asian culture. Nearly half a century ago, Nakamura (1964) remarked that "while every individual is affected by the quickening flow of world events, he is still strongly influenced by the way of living and thinking in his own nation and culture" (p. 3). With increasingly intensified globalisation, the flow of world events has only become more rapid, while individuals remain greatly influenced by their ways of cultural thinking. This is especially the case for people working at cultural institutions such as universities. Different ways of thinking of different cultures have profound impact on higher education development. While Chinese sages always taught their people to concentrate on human society only, their Western (especially ancient Greek) counterparts were committed to exploring the nature. Consequently, unlike the outward-looking Western thinking, the Chinese have been inward-looking and confined themselves almost exclusively to human behaviours. Such different orientations of cultural thinking have led to different historical trajectories of higher education development.

When first encountering *The Book of Changes*, the late great Swiss psychiatrist Carl Gustav Jung (1875–1961) wondered how a nation, as intelligent as the Chinese during early times, had failed to develop science and technology. Indeed, debates over such issues have been vigorous in both China and overseas, especially around the Needham's Grand Question (Cohen, 2001). The answer lies in the differences of cultural thinking: while ancient Western thinkers endeavoured to explore the outside world, such as the obsession of ancient Greek philosophers with the celestial

phenomena, their Chinese counterparts chose an inward-looking path. This reflects important differences in how the two civilisations understand human action in the world. Understanding oneself as part of the world instead of as outside it, the Chinese worldview does not view humans as distinct from the world (Henkel, 2006). Unlike the emphasis on exploration of the natural world in the origins of Western culture, moving from nature to the human world, the Chinese culture has centred on humans, moving from humans to nature. A severe dichotomy between theory and practice is not present in Chinese thought. The Chinese view the world as continual and in process.

According to Jullien (2004, p. 189), the basic difference between Western and Chinese thought is that "*one constructs* a model that is then projected onto the situation, which implies that the situation is momentarily 'frozen.' The other relies on the situation as on a disposition that is known to be constantly evolving." Noting the different relation of humans to nature in the West and in the East as one of the salient contrasts between the two civilisations, Fairbank (1983, p. 14) wrote:

> Man has been in the centre of the Western stage. The rest of nature has served as neutral background or as his adversary. Thus Western religion is anthropomorphic and early Western painting anthropocentric. To see how great this gulf is we have only to compare Christianity with the relative impersonality of Buddhism, or a Sung landscape and its tiny human figures dwarfed by crags and rivers with an Italian primitive in which nature is an afterthought.

Such a mode of thinking has had a strong impact on the historical development of China's higher education. Firstly, it led to the unique historical roots of Chinese higher education. China's higher education had evolved according to its own logic and never deviated from its developmental path, despite external influences. By the 18th century, China had developed a unique set of scholarly values over its 2,000 years of imperial history. Over such a long process, its higher education circles confined their dissemination of knowledge to the provincial level and persisted in disregarding knowledge about anything in the rest of the world. There was no institution in Chinese tradition that could be called a university. Instead, the imperial examination system began to take form around 400 CE, reached its full institutional development in the Tang dynasty, crystallised into patterns during the Song dynasty, and lasted right up to 1911. During the Song dynasty, what had been originally libraries or centres for scholarly discussion developed into academies (*shuyuan)* that provided a structured learning environment separate from, yet interacting with, state institutions associated with the imperial examination system. These academies were key elements of ancient Chinese higher learning (Hayhoe, 1996, pp. 10–11).

With the diffusion of the European model of the university throughout much of the world under conditions of imperialism and colonialism in the 19th century, China's higher education could have taken the lead in introducing and assimilating advanced culture, science and technology to promote social and economic development. Instead, due to its exclusivity, Chinese higher education continued to train traditional Confucian scholars with little knowledge of the outside world. Although Western higher education models had already demonstrated their strength, China's communication with the West was intentionally hindered. Chinese higher education within the period laid stress solely on the training of scholars with an encyclopaedic knowledge based on Confucian values, which in practice served only the aristocracy (Yang, 2002). The Confucian scholars acquired the education that symbolised their social status.

Secondly, lacking an interest in seeking knowledge for its own sake, traditional Chinese higher education placed its central focus on utility, in the terms of the ruling classes. After unifying China, Qin dynasty banned private schooling, allowed only to study from officials, and made imperial power supreme. Emperor Wu of Han (156–87 BC) adopted a piece of advice by Dong Zhongshu (179–104 BC) to revere only Confucianism and dismissed all the Hundred Schools of Thoughts. Dong recommended Taixue (literally meaning "Greatest Study or Learning", sometimes also called the "Imperial Academy", "Imperial School", "Imperial University" or "Imperial Central University") as the best place with its essential task not only to train talents but also to exert influence and select political personnel (Meng, 1996, p. 140). Meanwhile, Gongsun Hong (200–121 BC), the then prime minister, suggested the government establish a system of scholars with disciples so that local communities would be positively influenced while talents were rewarded. Emperor Wu took their advice, and ordered to establish Taixue in 124 BC to host scholars and their students, with a hope that they would set a good example for the entire society.

Taixue taught Confucianism (Ebrey, 1999). Even after one year of study at Taixue with mastery of one classic, students were eligible to be chosen by the government to become officials. By so doing, the government directly controlled their political future. This was the beginning of China's strong tradition for more than two thousand years-higher education aiming at preparing would-be officials for the state. Taixue thus became a subsidiary body of the bureaucratic system (Zhang, 2009, p. 18). As part of the ruling system, Taixue neither could nor attempted to go beyond the imperial framework. The first nationwide government school system in China was established in the third century under Emperor Ping of Han, with Taixue on the top located in the capital of Chang'an (Yuan, 1994). Later, it was replaced by the Guozijian as the top level of educational institution and as the highest

organisation to oversee the national government school system. The development of Taixue and Guozhijian was thus confined to the limited range allowed by their Confucian ideologies.

Some Sinologists (see, for example, Hayhoe, 1996), see the academies as an essential element of traditional Chinese higher education, stressing their private nature and freethinking atmosphere. Such features, however, were not always maintained. Sitting somewhere between the private and the official, the academies emerged in the late Tang dynasty, thrived from the Song to the Qing dynasties. Their longstanding historical developments bore a marked brand of ideological and financial control by the government. Initially they focused more on exploring Confucianism and personal intellectual cultivation than training government officials, with operating funds mainly from private donations. Such conditions, which could have become appropriate seed and soil for Western-style universities to grow, did not last long. In the Song dynasty, they became prosperous through winning the recognition and financial support from government. The government extended its control via donations of books and lands. With gradual loss of independence from the government, the academies reached their peak during the Southern Song, became a major part of the government education system, and trained many officials. They were integrated into the government school system from the Yuan to the Qing dynasties, from the appointment of lecturers to examinations, admissions and the whereabouts of the students. By the Qing dynasty, their major aim had turned to be preparing for the imperial examination in the hope of winning an official rank (Zhang, 2009, pp. 18–19).

In stark comparison, medieval universities did not emphasise their physical spaces. Instead, they were a collection of individuals banded together as an *universitas*. They were autonomous corporations of students and masters, governed by internal rules set by the academic community itself and protected from the outset by Pope Gregory IX's bull. They were self-financing, depending either on their properties or on contributions from students for their income. They were small, independent institutions catering to the elite and governed by their own members, who elected a rector (Mora, 2001). More specifically, a few features distinguished Taixue and Guozijian from their counterparts in Europe: (1) their teaching staff received a government salary; (2) they took major classical texts of the Confucian school as their curricular content; (3) their teaching approaches included mainly lectures and self-study, with little argumentation.

Therefore, China started its higher education system with a fundamentally different relationship between the state and educational institutions from that of medieval universities, leading to a strong tradition of the alliance between educati-

on and politics in Chinese history. Ancient Chinese educational institutions have been far too reliant on their relations with the ruling elites. It is remarkable to see how these traditional ways of thinking have survived dramatic social and cultural changes in China's modern history, and how they remain deeply rooted among the Chinese people. It is precisely because of this that their impact on contemporary Chinese higher education is amazingly profound. Unfortunately, the rich traditional Chinese culture has caused great difficulty in indigenising the imposed Western concept of the university.

Limited success to combine the western with the Chinese

The strikingly different cultural roots and heritages have led to continuous conflicts between the traditional Chinese and the imposed Western system. Modern higher education systems have rarely been successfully practiced in the non-Western world, due to the constant tensions between the formal (visible), institutionalised and the informal (invisible yet powerful) systems within universities in non-Western countries, leading to overall ineffectiveness. This is particularly true in China. However, attempts to indigenise the Western idea of a university started, in a piecemeal way, with Matteo Ricci's arrival into China, which was the prologue to a massive play of China's embrace of Western learning. Educational ideas from the West were introduced to the then still highly Sino-centric Chinese society first by the missionaries including Ernst Faber (1839–1899), Timothy Richard (1845–1919), William Alexander Parsons Martin (1827–1916), and Young John Allen (1836-1907). While they attracted little attention from mainstream Chinese thinkers, a few open-mined thinkers such as Wei Yuan and Xu Guangqi began to explore Western universities. Some of the missionaries established universities in China (Jin, 2000, p. 10), based on the models existing in their home countries, Many others were heavily involved in the growth of Chinese modern universities. Charles Daniel Tenney, for example, was invited by Sheng Xuanhuai to be the Dean of Studies at Peiyang University and remained at the post for 11 years. Modelled on Harvard and Yale, Peiyang University focused almost exclusively on practical subjects, with all its facilities imported from the United States. It trained many much-needed engineers, with a reiterated orientation for pragmatism. Its success was greatly due to the high official rank and great influence of its founder.

The Opium Wars forced more Chinese to open their eyes. Guo Songtao who was selected to become China's first ambassador was sent to the UK in 1876. He

observed British universities carefully during his two year stay there. While most in the Qing government, including his own deputy in the UK, still held the "foreign craft" in contempt, Guo developed a far better understanding of the values underlying British universities and the vital role played by universities in nation-building (Fan, 2002, p. 250). Echoing Guo was Yan Fu who saw more fundamental roles of education. He correctly pointed out that scientific rationality was the essence of Western learning, and called for a scientific spirit among the Chinese people. Such an understanding once exerted wide and profound influence on Chinese intellectuals in the late 19th and early 20th century, but has been regrettably ignored later.

Efforts to indigenise the Western university model succeeded in varying degrees at various levels. Achievements were most evident at the individual level. Chinese thinkers, such as Cai Yuanpei and Hu Shi, never stopped trying to combine the Chinese with the Western ever since the 19th century. Cai Yuanpei deserved the highest tribute in this regard. Believing that education was the only way to rejuvenate China (Cai, 1997, p. 94), he went to Germany in 1907 to obtain actual experience and enrolled at Leipzig University where he took courses in philosophy, aesthetics, anthropology and experimental psychology. He studied German universities from their historical and philosophical roots to daily operation, combining theoretical inquiry with personal experience and on-the-spot observation. He introduced German classical ideas of a university into China, and was able to undertake a courageous experiment when he was appointed Minister of Education by the government in 1911 and Chancellor of Peking University in 1917. His momentous years transformed the university from an official institution of the Qing dynasty, already rotten in thought and action despite the fact it had been established only recently, into a modern institution (Yang, 2009). At Peking University, he strongly advocated free thinking principles and an all-embracing approach, which is now seen as the most fundamental characteristics of Peking University.

Built on the work done by Xue Fucheng and Zheng Guanying during the last decade of the 19th century, Cai introduced the *Humboldtian* system into China. The system was a product of German Idealism and defined research as the main role of the university (Mora, 2001). His success as a leader of a university was unprecedented and still without parallel nearly a century later. John Dewey even set a higher value on his remarkable leadership in comparison with the presidents of the most prestigious American and British universities (Feng, 1992). His efforts focused mainly on typifying the transformation of Chinese education from ancient to modern form, giving expression to conflicts and integration between traditional and modern, and remoulding Peking University into a Western-model institution that is established by the government while tied in many ways to the traditional

system. His attempt was to combine the Chinese educational spirit, especially the Confucian and Mohist character building, with Western systems. He was joined by a few like-minded others including his successor Hu Shi, Mei Yiqi (president of Tsinghua University) and Zu Kezheng (president of Zhejiang University). However, none of the followers could accomplish as much as he had.

An example of institutional success during this time period despite extreme hardships is the National Southwestern Associated University in Kunming, which was the amalgamation of the three major national Universities of Tsinghua, Peking and Nankai when the Second Sino-Japanese War broke out between China and Japan in 1937. Over the eight years of war (1937–1945), the institution became famous nationwide for having and producing many of China's most prominent academics, scholars, scientists and intellectuals. In addition to struggling for physical survival, its staff and students spent the war years striving to uphold a model of higher education in which modern universities, based in large part on the American model, sought to preserve liberal education, political autonomy, and academic freedom. Within three years after the war of resistance ended with victory over the Japanese, the majority of the university community had returned to their north China campuses in Beijing and Tianjin, and was prepared to accept communist rule. Successful in the face of wartime privations, enemy air raids, and political pressure from the ruling party, the University's constituent universities eventually succumbed to communist rule. By 1952, the University's ideal had been largely replaced with a highly politicised and technocratic model borrowed from the Soviet Union. Academic freedom and world-class qualities in teaching and research soon belonged to the past.

At the system level, the period of 1911 to 1927 saw the first real effort to establish a "university" in the sense of the defining values of autonomy and academic freedom. Within the period, a tremendous range of new higher education institutions also developed and flourished. Different strands of China's own evolving traditions linked up with various foreign influences, with America replacing Japan as the most favoured source of influence. Hayhoe (1996, p. 43) has rightly and sharply pointed out that the lack of central government provided Chinese higher education with the possibility of vigorous experimentation. It is also important to add that many Chinese scholars who returned from Western countries and Japan played a critical role in the development of higher education. Educational thought gradually matured, with eclectic foreign influences, particularly from America and Europe.

What needs to be emphasised is that it is not purely accidental that these relative successes were all achieved when the Chinese nation was plunged into an abyss of suffering. Although unfortunate and ironic, it shows the extremely limited room allowed by strong Chinese traditions for higher education institutions to manoeu-

ver. While the successes at system and institutional levels were achieved when the state had little time and energy for them, Cai Yuanpei's success was largely due to his most senior status within the ruling party as one of the founders. His success stories could hardly be replicated by others. Instead of creating a magic mechanism to delink university operation from the government, his achievement was made possible because of his personal relationship with the highest officials. Within a decade after his departure from Peking University, his influence weakened. Since then, government control over universities has become even tighter. Having lost their independence in the political system, universities are administered just like the other organs of the Chinese administrative machine.

China's lingering predicament

Although limited, the success achieved in the early 20th century at various levels is highly commendable. Indeed, there has never been better achievement since then. What seems ironic in today's context of a rising Chinese power is that the conflict between traditional Chinese emphasis on political pragmatism and the classical persistence in ontological significance of knowledge from the West never blended well. The ideal to integrate Chinese and Western ideas never materialised. Dominated by a mentality of catching up, the search for such integration has been, consciously and unconsciously, left aside and overshadowed by urgent practical demands. As noted earlier, the idea of the university is a Western import, and elements of universities' long historical traditions directly affect global higher education and relations among academic institutions internationally. The export of the university, fuelled particularly by the rise and dominance of the English language, has helped the West effectively dominate world scholarship and cultural development ever since the global spread of the European-North American university model. While Chinese culture's lack of interest in exploring the natural world led to a unique higher education tradition that contradicts fundamentally with the Western, the interdependent Chinese cultural thinking has fostered a social and policy environment to widely accept the dominant European-North American university model in China. The Western model influences the direction of change in Chinese institutions of higher education. Chinese universities look to the most elite American counterparts for standards, policy innovation and solutions to their own development problems.

Contemporary university reforms in China are a combination of externally imposed standards forcing China to adopt international (usually Western, and

often American) modes of education and administration, as well as voluntary and even enthusiastic acceptance of foreign standards of academic excellence. Most of the international models for reform used by Chinese universities are based on the American experience and gained through educational exchange. This is particularly the case for the most prestigious universities. For example, the proposed personnel reform at Peking University has been based almost entirely on the perceived US experience (Yang, 2009). The grafting of American policies onto Chinese university structure is not always built on sound understanding of the cultural differences involved (Mohrman, 2008, p. 42). In this sense, Gan Yang's (2005) accusation of Peking University reformer Zhang Weiying's shortage of US higher education experience on the one hand, and his almost entire reliance on the American experience on the other, is relevant. He remarked:

> The more the Beida [Peking University] reform plan advertises emulation of the United States, the more often it reveals the absence of a fundamental understanding of the American system on the part of the people in charge at Beida…I can almost say with certainty that Mr. Zhang Weiying has never read any books about the American tenure system; otherwise he should know that the so-called "up-or-out" that he loves to cite is actually a simplified version of the regular statement "seven years up-or-out rule," sometimes also enunciated as "six years up-or-out," the meaning of which is "if you're not promoted in seven years, you go," or "if you're not promoted in six years, you go." This is because the probationary period at the great majority of American universities does not exceed seven years. (p. 72)

Like other reformers at Peking University such as Min Weifang (2004) who cites almost exclusively Harvard and Stanford Universities to legitimise their policy moves and states repeatedly that American research universities are the best in the world, Zhang Weiying (2004) enumerated the reasons for granting tenure to full professors and some excelling associate professors in his book *The Logic of the University*. He borrowed foreign experience especially the American practice to argue that by so doing, established professors would be provided with a security so that they can concentrate on their long-term basic research rather than work for quick success and instant benefits. He also emphasised the use of the tenure policy to give young junior academics some hope and initiative to work harder and better.

However, the foreign tenure policy lost its real meaning when it was borrowed by Zhang. According to Chen Pingyuan (2006), the tenure policy promoted by the American Association of University Professors and the Association of University Teachers in Britain set up respectively in 1915 and 1919 was motivated neither

by economic benefits nor by lifelong employment, but was designed to protect ideological and academic freedom. It is a natural part of the longstanding idea of the university and shares the same roots with the modern university. It is neither a favour from nor a useful tool for the university authorities.

Gan Yang (2003) offered similar criticism of the proposed plan's failure to express any serious interest in protecting academic freedom. According to him, such a failure was not accidental. It shows that the advocates of the proposed reform were short of necessary knowledge of the policies practiced in the USA and the UK, something that had ironically been used by them to legitimise their reform plan. Like Chen Pingyuan, he insisted that the tenure systems in the US and British systems were designed to protect academic freedom instead of advocating market competition. In his eyes, the proposed reform plan at Peking University "has neither taken the clear and rational American system into serious consideration, nor has it taken reference from the sensible British system" (p. 11).

Instead, the proposed reform at Peking University aped the practices at the Hong Kong University of Science and Technology, which is another American model in Hong Kong. To Gan Yang, this was particularly unfortunate, as the Hong Kong University of Science and Technology was the least suitable model for Peking University. He remarked:

> First, the Hong Kong University of Science and Technology is a brand-new university, with its first enrolment in October 1991. It does not have any problems with the unqualified academic staff members appointed previously. Secondly, the University enjoyed abundant funding right from the beginning, with a budget of HK$3.5 billion approved by the Hong Kong Legislative Council. Finally, it is primarily a university of technology and science, without undergraduates students enrolled in the humanities and social sciences. This is a stark contrast to an old university like Peking University which is particularly renowned for its humanities. (Gan, 2003, pp. 13–14)

The wholesale adoption of US plans may not be totally appropriate for a country with a very different history and cultural traditions. At a minimum, Chinese universities could benefit from studying the problems that have plagued American universities, learning from the examples of what not to do in the effort to reform China's higher education institutions (Mohrman, 2005). There is an urgent need for critical examination of the long-term consequences of grafting American academic practices onto a Chinese base. American higher education is rooted in its history, culture and social needs to serve the American society. With strikingly different cultural values

and heritages, the Chinese need to look at knowledge and its production outside China more critically.

Another illustrative example of the unfinished business is China's contemporary higher education policies, which demonstrate Deng Xiaoping's strategy of "groping for stones to cross the river." Here, ideologies are less important. Traditional differences in educational values were shelved. What was stressed most was the possible educational contribution to economic growth. By the 1980s, China had incorporated a series of measures from foreign experiences including decentralisation and market mechanism, without exploring the institutional support for and the ideological foundations of these approaches, which seemed to be effective only in a few major Anglo-Saxon societies. While the structure of Chinese education remained largely based on the former Soviet model, the reforms were clearly American oriented. Little serious work was done to explore whether American branches could be effectively grafted on a Soviet tree planted in a Chinese garden (Pepper, 1990). China's emphatic determination to separate the advanced knowledge of Western capitalist countries from what were still perceived as "decadent ideas" and a "bourgeois way of life" had overtones of the formula devised in its early modernisation efforts: "Chinese learning as the substance, Western techniques for their usefulness" (Ayers, 1971). The disaggregation of Western culture into positive and negative elements was arbitrary. There had been no real equilibrium between Chinese and Western learning, a basic premise for China's successful integration into the world community.

Since the 1990s, China's higher education policies have aimed at both qualitative and quantitative developments, including the Program for Education Reform and Development in China (1993), the Education Act of the People's Republic of China (1995), the 211 Project (initiated in 1995), the 985 Project (initiated in 1998), and the dramatic expansion starting from 1999. More recent is the quest for world-class universities, which is designated as one of China's key policy positions. It reflects the larger changes in Chinese society, as China moves to engage with the outside world and reforms its economy to adopt market principles. The desire to have internationally competitive universities provides impetus for China's best institutions to follow the lead of European and North American universities, from curriculum to financial practices to new governance structures, further enhancing the frame of reference in higher education policy and a fervent embrace of international norms, especially in the top layer of universities. However, as observed by Mohrman (2005), the notion of world-class status within China seems largely imitative rather than creative. In striving for international standing, top Chinese universities compare themselves with Oxford and Yale, but they lack the centuries-long history and financial resources of Western universities.

The latest policy initiative is the Medium and Long-Term Education Reform and Development Plan (2010–2020) approved by the State Council in May 2010. Considering that it is China's educational blueprint for the next ten years, it is expected to demonstrate the vision and determination of the Chinese leadership. In many areas where China is facing serious challenges such as disparity and quality in education, the policy has demonstrated technical preparedness. What it lacks, like its predecessors, is exactly what is required for a blueprint especially for a re-emerging China, a country with the world's only continuous civilisation for thousands of years. The Plan could have been much more visionary to make cultural preparation for China's more well-round future global roles, instead of remaining confined to the long-term catch-up mentality. However, it continues to demonstrate prioritised economic considerations in educational policymaking (Sigurdson, 2004). Economic development is the reference point in every part of the initiative, once again leaving knotty issues of culture and values aside.

End remarks

Throughout the modern era, Western and Chinese learning have contended for hegemony. Education has always been a key aspect of the reform efforts (Bastid, 1988). Holmes (1984) argued that the transfer of policies and practices from foreign countries would only succeed if they did not do violence to classical Chinese concepts of knowledge and did not threaten the power of the scholar officials. Unfortunately, China's experience has showed that the transfer of Western practice conflicts with the Chinese traditions. Modern universities are a foreign transplant to China. Indigenous Chinese higher education institutions only shared superficial resemblance with the medieval university in Europe. The central purpose of China's modern higher education has been to combine Chinese and Western elements at all levels including institutional arrangements, research methodologies, educational ideals, and cultural spirit, a combination that brings together aspects of the Chinese and Western philosophical heritages. Such a goal has never been achieved.

The emphasis has always been on use, with corresponding ignorance of body. The development of Chinese modern universities has always been confronted with the absence of both classical and modern ideas of a university. While Chinese longstanding traditions never attempted to seek the ontological significance of knowledge, practical demands, consciously and unconsciously, have always been the highest priority. As part of the national reform agenda, China's contemporary

policies are in continuity with reforms since the 19th century. Throughout this period, Chinese universities have experienced ups and downs in putting into practice the then already popular vision of retaining "Chinese learning as the essence" while systematically incorporating the new knowledge essential to build the nation (Hayhoe, 2005). This explains why the best institutional experiment was achieved by the National Southwestern Associated University, and justifies the system's best innovations during 1911–1927.

Today, China's strategy remains the same. At a certain stage, such strategy could be effective. China's universities beat India's in almost every international ranking. According to the latest Academic Ranking of World Universities conducted by the Centre for World-Class Universities of Shanghai Jiao Tong University (2011), China has Tsinghua University in the top 200; Fudan University, Nanjing University, Peking University, Shanghai Jiao Tong University, University of Science and Technology of China, and Zhejiang University in the top 300; China Agricultural University, Huazhong University of Science and Technology, Shandong University, Sichuan University and Sun Yat-sen University in the top 400, and 11 others in the top 500. China features 23 times in the top 500, and India only once.

Nevertheless, such promise is doomed to be limited. China has a considerable distance to go before its aspirations to create truly world-class universities are fulfilled. In the present great leap forward in Chinese higher education, what has often been missing is attention to cultural and institutional establishments. An internationally recognised scholarly ethos may take longer to develop than many academic and/or political leaders in China are willing to admit. Simply buying state-of-the-art laboratory equipment or pushing for more journal articles will not guarantee the kind of intellectual atmosphere that has developed over centuries on European and American campuses. Although China's recent developments deserve to be noted, they could soon hit a glass ceiling (Altbach, 2010).

China's universities have been able to improve their hardware considerably, while, as is always the case in China, the software building takes much longer. In order to be truly "world-class," Chinese universities cannot afford to continue to avoid the important and dwell on the trivial. Universities as cultural institutions have three layers with materials on the surface, social institutions in the middle, and values at the core. China's import of the Western university model has been centred mostly on the material level, with some touches on social institutions, while the core of the Western model, such as academic freedom and institutional autonomy, has rarely been understood, let alone implemented. The idea that the Western university model could work well on Chinese soil has been mistakenly taken for granted. For long, Deng Xiaoping's aphorism "Black cat, white cat, who cares as long as it can

catch mice" has been burnt into Chinese souls. It is now high time to reflect on the fundamental reasons for our long failed attempt to integrate the Chinese and Western ides of a university.

More research is needed to investigate whether or not and how Chinese traditional education values inform China's contemporary higher education policy and practice. In the context of rising Chinese power, this is indeed an all-important project, with great theoretical significance and strategic implications, for both China and the world. In many respects, the issue of hybridisation - how Chinese education will blend Western modernisation and values with Chinese traditions to produce a distinctively Chinese modernisation in education - remains open. How can the best of each generic tradition (albeit diverse, complex, etc.) be combined? What will be a rounded, broadly educated modern person in the next period? How can education both continue and develop the national and local forms of life and contribute to global relationships in a sustainable world in which power will no longer be monopolised by the West and will instead be shared between the United States, Western Europe and East Asia, with China playing a pivotal global role? Such questions demand our urgent attention.

References

Altbach, P. (2001). The American academic model in comparative perspective. In P. Altbach, P. Gumport & B. Johnstone (Eds.), *In defence of American higher education* (pp. 11–37). Baltimore, MD: Johns Hopkins University Press.

Altbach, P. (2010). Enter the dragons? Not so fast. *Times Higher Education*, 17 June, 39.

Ayers, W. (1971). *Chang Chih-tung and educational reform in China*. Cambridge, MA: Harvard University Press.

Bastid, M. (1987). Servitude or liberation? The introduction of foreign educational practices and systems to China from 1840 to the present. In R. Hayhoe & M. Bastid (Eds.), *China's education and the industrialized world: Studies in cultural transfer* (pp. 3–20). Armonk, N.Y.: Sharpe.

Bastid, M. (1988). *Educational reform in early twentieth-century China*. Ann Arbour, MI: Centre for Chinese Studies, University of Michigan.

Cai, J. G. (1997). *Cai Yuanpei and modern China*. Shanghai: Shanghai Science Press.

Centre for World-Class Universities of Shanghai Jiao Tong University (2011): Academic ranking of world universities. http://www.shanghairanking.com/ARWU2011.html Retrieved on January 29 2011.

Chen, P. Y. (2006). *What is the university*? Beijing: Peking University Press.

Cleverley, J. (1991). *The schooling of China*, Sydney: Allen & Unwin.

Cohen, F. H. (2001). Joseph Needham's grand question, and how to make it productive for our understanding of the scientific revolution. In A. Arrault & C. Jami (Eds.), *Science and technology in East Asia, Vol. 9: The legacy of Joseph Needham* (pp. 21–31). Turnhout, Brepols.

Ebrey, P. B. (1999). *The Cambridge illustrated history of China*. Cambridge: Cambridge University Press.

Fairbank, J. K. (1983). *The United States and China*. Cambridge, MA: Harvard University Press.

Fan, J. Z. (2002). *Lonely forerunner: A biography of Guo Songtao*. Beijing: People's Literature Publishing House.

Feng, Y. L. (1992). *A short history of Chinese philosophy*. Hong Kong: Taipingyang Publishing Co.

Gan, Y. (2003). The legality and legitimacy of university reforms. In L.Q. Qian & Y.D. Gao (Eds.), *Problems and reforms in Chinese universities* (pp. 3–14). Tianjin: Tianjin People's Press.

Gan, Y. (2005). The Beida reform follows the example of "peach pickers" but should spend more time "planting peach trees". *Chinese Education and Society, 38*(1), 75–79.

Gao, N. (2008). *Educational evolution and cultural heritage*. Changsha: Hunan University Press.

Gutek, G. L. (2006) *American education in a global society: International and comparative perspectives*. Long Grove, Ill.: Waveland Press.Hayhoe, R. (1989). China's universities and Western academic models. *Higher Education*, *18*(1), 49–85.

Hayhoe, R. (1996). *China's universities 1895–1995: A century of cultural conflict*. New York: Garland.

Hayhoe, R. (2005). Peking University and the spirit of Chinese scholarship. *Comparative Education Review*, *49*(4), 575–583.

Henkel, J.E. (2006). Book review of *A treatise on efficacy: between Western and Chinese thinking* by François Jullien (Honolulu: University of Hawaii Press, 2004), *Philosophy East & West*, *56*(2), 347–351.

Holmes, B. (1984). A comparativist's view of Chinese education. In R. Hayhoe (Ed.), *Contemporary Chinese education* (pp. 7–25). London: Croom Helm.

Jin, Y. L. (2000). *Studies of modern Chinese universities*. Beijing: Central Party Literature Press.

Jullien, F. (2004) *A treatise on Efficacy: between Western and Chinese thinking*. Honolulu: University of Hawaii Press.

Lee, T. H. C. (2000). *Education in traditional China: A history*. Boston: Brill.

McMullen, D. (1988). *State and scholar in T'ang China*. Cambridge: Cambridge University Press.

Meng, X. C. (Ed.), (1996). *Collections of ancient Chinese works on education*. Beijing: People's Education Press.

Min, W. F. (2004). Secretary Min Weifang's face-to-face interview with Chinese central television on the subject of Beijing University's personnel reform. *Chinese Education and Society*, *37*(6), 38–47.

Mohrman, K. (2005). Sino-American educational exchange and the drive to create world–class universities. In C. Li (Ed.), *Bridging minds across the Pacific* (pp. 219–235). Lanham: Lexington Books.

Mohrman, K. (2008). The emerging global model with Chinese characteristics. *Higher Education Policy,* 21, 29–48.

Mora, José-Ginés (2001). Governance and management in the New University. *Tertiary Education and Management*, 7, 95–110.
Nakamura, H. (1964). *Ways of thinking of Eastern peoples: India-China-Tibet-Japan*. Honolulu, Hawaii: East West Centre Press.
Nisbett, R. (2003). *The geography of thought: How Asians and Westerners think differently...and why*. New York: The Free Press.
Pepper, S. (1990). *China's education reform in the 1980s: Policies, issues, and historical perspectives*. Institute of East Asian Studies, University of California, Berkeley.
Reagan, T. (2000). *Non-western educational traditions: Alternative approaches to educational thought and practice*. Mahwah, N.J.: Lawrence Erlbaum Associates.
Sigurdson, J. (2004). China becoming a technological superpower – A narrow window of opportunity. East Asian Institute, National University of Singapore.
Sprenger, A. (1991). Confucius and modernisation in China: An educational perspective. In S. Krieger & R. Trauzettel (Eds.), *Confucianism and the modernisation of China* (pp. 454–74). Mainz: v. Hase & Koehler Verlang.
Wu, P. Y. (1989). Education of children in the Sung. In W. de Bary & J. Chaffee (Eds.), *Neo– Confucian education: The formative stage* (pp. 307–324). Berkeley: University of California.
Yang, R. (2002). *Third delight: The internationalisation of higher education in China*. New York: Routledge.
Yang, R. (2009). Enter the dragon: China's higher education returns to the world community. In J. Smart & W. Tierney (Eds.), *Higher education: Handbook of theory and practice* (pp.431–467), Dordrecht: Springer.
Yang. R. (2011). Self and the other in the Confucian cultural context: Implications of China's higher education development for comparative Studies. *International Review of Education*, 57(3–4), 337–355.
Yao, X. Z. (2000). *An introduction to Confucianism*. Cambridge: Cambridge University Press.
Yu, Q. D. (2003). Origin and evolution of Chinese educational traditions. In J. Huang & Q. J. Guo (Eds.), *Educational traditions and modernization in China: Fundamental issues* (pp. 1–24). Beijing: Beijing Normal University Press.
Yuan, Z. (1994). Local government schools in Sung China: A reassessment. *History of Education Quarterly*, 34(2), 193–213.
Zhang, W.Y. (2004). *The logic of the university*. Beijing: Peking University Press.
Zhang, Y. (2009). *Western ideas of a university in China: Introduction and impact*. Hangzhou: Zhejiang University Press.

Chapter 7

Characteristics of Chinese higher education system in the primary stage of the massification era

Chongzheng Sun & He Zhu

Higher education in China is still at the primary stage of massification. To adapt to the demand of the economic and social development at national and regional levels, constantly optimize the structure of higher education, set up a diversified higher education system, guide universities to focus into their own mission, develop their own school-running ideas and patterns, evince distinctive features at various levels and in different spheres and strive for the best, are the inexorable requirements for upgrading higher education while enhancing the competitiveness of China's higher education on international arena.

Higher education system in China

In research literatures related to higher education system, the notion of higher education system is represented alternately by such terms as "stratification within the higher education system", "types of institutions of higher learning", "categories of institutions of higher learning" and "position of institutions of higher learning". According to the researchers of this paper, "stratification within the higher education system" is a portion of the notion of higher education system, describing and defining the "constituent elements of an integral idea". However, such concepts as the types,

categories and orientations of institutions of higher learning are micro-aspects of "the stratification within the higher education system" which will be of substantive meaning only if there is a clear and definite position of various types of institutions of higher learning. Therefore, the discussion of the orientation and classification of the institutions of higher learning is actually the discussion of the classification of higher education system from the micro perspective. In this paper we hope to indirectly reveal the relevant characteristics of Chinese Higher Education System by discussing the classification and orientation of Chinese institutions of higher learning at the primary stage of massification.

Due to the internal and unified logic structure among the classification standards for the institutions of higher learning, the position of the institutions of higher learning in the higher education system can be determined based on the type of school-running, the level and characteristics of the institutions of higher learning.

In terms of the type of school-running, the relevant classification standards include the administrative subordinate relationship, division by disciplinary profile and the characteristics of school-running subjects. According to the administrative subordinate relationship, the higher education institutions (HEIs) can be classified into those under the Ministry of Education and other ministries and commissions directly under the Central Government, and universities and colleges under the local government. According to the division by disciplinary profile, they can be divided into single-discipline universities/colleges, multi-discipline universities/colleges and comprehensive universities/colleges. According to the characteristics of school-running subjects, HEIs can be classified into those run by the State and by the local people.

The level of an institution refers to the level of student training, academic research and its contribution. If classified based on the level of student training, HEIs can be aimed to develop academic talents, professional high-tech personnel or vocational and technical labor force. This classification is related to the level of degree awarding entitlement. By academic contributions, they can be classified into research, teaching and research, and teaching institutions of higher learning (Pan & Wu, 2003).

Characteristics of an institution of higher learning refer to the unique school-running connotation of an institution of higher learning compared to other institutions. They are reflected by many aspects, including the concepts and styles of school-running, the goals of student cultivation, the level of disciplinary development, curriculum system and management style, etc. (Liu, 2003). In the higher education system that highlights competition and diversification, the characteristic profile can, to a large extent, reflect the management performance of a university or college.

In the higher education system featured by diversification, the characteristics presented by the institutions of higher learning are quite complicated. Under such circumstances, it is very difficult to classify the Chinese Higher Education System in an all-around way based on a single classification standard. The classification shall be based on different classification standards, and from diversified perspectives.

By referring to the Classification of Institutions of Higher Education by the Carnegie Foundation for Advancement of Teaching (classified based on the level of degrees granted), the classification standards on the institutions of higher learning of Guangdong Management Science Research Institute (classified based on two dimensions: "category" – the division of discipline, "size" – scale of scientific research) and the standards on the classification of Chinese HEIs that are recently released by the research team of Zhejiang University (U-ERO model), this paper adopts the level of student training, academic contributions, division of discipline and the characteristics of school-running as the standards for classification, and considers administrative subordinate relationship and characteristics of school-running subjects when analyzing the structure of Chinese Higher Education System. Accordingly, this paper classifies Chinese HEIs into five types, including "**national first-class research universities**", "**industrial background and regional high-level universities**", "**ordinary universities and colleges at undergraduate level**", "**vocational higher education institutions**" and "**private universities and colleges**". Researchers of this paper believe that the classification basically covers all Chinese HEIs in terms of extension; in addition, obvious differences and internal connections– along with hierarchical features can be seen from the classification, which indicates the reasonability and scientific relevance of the classification to some extent.

Rational positioning and promoting advantages to characteristic development achievement

The classification of higher education institutions is actually reflecting the self-orientation of all types and all levels of HEIs from the micro perspective. In the diversified higher education system that highlights competition, the development based on the classification is the rational choice of HEIs, and the precondition of such development is the clear and definite orientation. Some scholars even pointed out that China's higher education in the massification era should form two systems, namely, "the system of elite higher education and the system of mass higher education" (Zhou, 2003). So far, the Chinese higher education system remains a stratified but complete

system, with its internal differences and connections. Institutions of higher learning that fall into different categories with clear and definite orientations. Based on this, there should be work division, cooperation and scientific contacts. Only in this way, the comparative advantages of HEIs at various levels and of various types can be brought into play, and the overall quality of higher education can be improved.

National first-class research universities

The first-class research universities in China mainly include the institutions of higher learning that were selected for the Project 985 (including 39 HEIs such as Peking University). Such institutions of higher learning are featured by the following (data listed below are collected from the site of the Chinese Ministry of Education):

They have been founded long ago, and are highly recognized by the society. The first-class research universities of China are mostly well-established universities, and they have experienced a longer period of development. Taking Tsinghua University as an example, it was founded in 1911, and upon hundred years' development, its performance has been widely recognized by various circles of the society. For another example, Peking University, the first state-run comprehensive university of China, was founded in 1898. Upon over 100 years' development, it contributed irreplaceably to the rejuvenation and liberation of the Chinese nation, the building and development of the nation, as well as social civilization and advancement; and played a pioneer role during the course of modernization of China. In addition, Tianjin University and Shanghai Jiaotong University are century-old universities. Tianjin University grew out of Peiyang University founded in 1985; and Shanghai Jiaotong University, honored as the "MIT in the east", was founded in 1896.

They have a highly competitive faculty. In the nine universities that were determined earliest in the Project 985, the number of teachers with senior professional titles is basically more than 70% of full-time teachers; more than 70% (or even 85% in some universities) of full-time teachers hold a Master's Degree. In terms of education-related structure of full-time teachers, basically, 60% of teachers have studied or worked in domestic or foreign institutions of higher learning; and the percentage of young teachers who have studied abroad is increasing, and even reaches 50% in certain universities. In terms of attracting internationally renowned scholars and experts, these nine universities are the pioneers among all HEIs. They have employed experts and professors who have international prestige, and some of them are even the top-award winners in the specialty (Wang & Kong, 2009).

The focus of such HEIs is on high-level talent training in China. The institutions of higher learning under the Project 985 have trained a large number of research talents; and such universities have a high proportion of Master's Degree candidates and PhD candidates. In terms of student grades, the proportion of Master's Degree candidates to undergraduates is quite high in the institutions of higher learning under the Project 985 that are regarded as representatives of research universities. Taking Peking University and Tsinghua University as examples, the proportions of undergraduates to Master's Degree candidates are 1:1.22 and 1:1.3 respectively. It is worth mentioning that the number of Master's Degree candidates in HEIs under the Project 985 is increased based on ensured education quality. These institutions boast a competitive faculty, favorable research conditions and outstanding research achievements. According to the statistical data of the *China Education Yearbook*, about 50%–60% of dissertations of PhD candidates in the institutions of higher learning under the Project 985 are honored excellent grades; and it is no longer a rare phenomenon that the thesis with Master's Degree candidate as the first author is published in international journals.

Project 985 HEIs focus on scientific research, and are featured by competitive research strength and fruitful research achievements. As the research universities that are emphasized by the state, the HEIs under the Project 985 are funded greatly by the state. Data shows that institutions of higher learning under the Project 985 have relatively abundant funds. The research funds for some schools even exceed RMB 1.5 billion (Office of Intra-Department Coordination Team for the Project 211, 2007). In terms of undertaking research projects, HEIs under the Project 985 present significant strength, as the Project 973 and the Project 863 are mainly undertaken by them. For the scientific and technological awards set up by the State, the institutions of higher learning that are emphasized in the Project 985 won almost all top awards. In addition, the number of theses published in international academic journals by the researchers from universities to which great importance is attached is increasing dramatically.

They have well developed disciplines, and have paced the whole nation in disciplinary construction. Institutions of higher learning under the Project 985 all have their own advantageous disciplines, and are able to complete the construction of discipline system based on the advantageous disciplines. The national policies also provide great support for them to do so. During the course of the Project 985, the Ministry of Education proposed that "we should focus on the construction of a batch of science and technology innovation platforms for the Project 985 and the innovation bases of philosophy and social sciences for the Project 985, and promote the shaping of a batch of world-class disciplines and the disciplinary construction, by

combining the construction of national innovation system" (Qiu, 2007). According to the ESI database, Peking University, Tsinghua University, Zhejiang University, Shanghai Jiaotong University and Fudan University appear on the ranking list of the 22 disciplines among the global HEIs, according to their quoted theses. See Table 1 for details.

Table 1. Rank of Disciplines in Some Universities of Chinese Mainland, 2007

Name of University	Number of Ranked Disciplines	Percentage to the 22 disciplines (%)
Peking University	9	40.9
Tsinghua University	5	22.7
Zhejiang University	8	36.4
Shanghai Jiaotong University	4	18.2
Fudan University	7	31.8

Source: Shan (2009).

The aforesaid features indicate that China's first-class research universities are leading the development of China's higher education. They proceed from the long-term strategy of national development; solve the key scientific and technological difficulties; and strive to be at the forefront of the world's technological innovation. Therefore, they are the important venue for inheriting and carrying forward the excellent Chinese culture; exchanging and learning from the world's advanced culture; and for innovating and transmitting new knowledge, new thoughts and new theories.

Industrial background and regional high-level universities

The industrial background and regional high-level universities are mainly institutions of higher learning under the Project 211, and also include well-established undergraduate level universities and colleges (i.e. institutions of higher learning founded in the 1950s) that have solid foundation. The basic characteristics of institutions of higher learning under the Project 211 are similar to those of the Project 985 to some extent. These HEIs represent around 100 universities, with a history of over 50 years, a certain scale, a certain level of education for Master's Degree candidates, and a competitive faculty. In addition, they have clear and definite orientation in terms of teaching, scientific research and social services. Universities with industrial background refer to universities "that have industrial backgrounds […] and that are dedicated to a special field under the given course and orientation of development;

and boast advantages in disciplines and specialties, talent training, scientific research, social service, expert team, operational conditions and international exchange and cooperation in a certain industry" (Office of Intra-Department Coordination Team for the Project 211, 2007). As these universities have centered on traditional advantageous disciplines for a long time, they have framed advantageous discipline system during the disciplinary construction; and have developed the peak of discipline, the plateau of discipline and their own characteristics of operation. They are also well integrated in the industrial innovation system, and provide a large number of disciplinary and technology talents for the development of the industry. To be specific, "**industrial background and regional high-level universities**" are featured by the following characteristics (Research Team of Zhejiang University, 2009):

They have specified orientation of services, and are the backbone of the industrial /regional innovation system. Available materials show that in 2007, in terms of the allocated science and technology funds, the HEIs that were jointly established by the Project 211 and province/ministries got RMB38,837,808,000 in total, which accounts for 71.2% of the total funds allocated to the regular institutions of higher education all around the country (RMB54,535,569,000). In the same year, the total number of teaching and research personnel in such institutions of higher education reached 270,460, accounting for 37.1% of that in the regular HEIs all around the country (727,616). In addition, the total number of research and development personnel in the HEIs that were jointly established by the Project 211 and province/ministries reached 134,434, accounting for 47.3% of that in the regular institutions of higher education all around the country (284,026); the total number of personnel for the application of R&D achievements and science & technology services reached 25,474, accounting for 55.1% of that in the regular HEIs all around the country (46,157). Besides, the course of development of universities with industrial background indicates that their industrial background results in strong capacity of direct services for the industry. Meanwhile, most of the universities with industrial background have established a trusting and close cooperative relationship with the relevant enterprises. They are familiar with the industry, understand the industry well; therefore, they can solve some scientific and technological difficulties of the industry, and they can meet the demands of the industry for knowledge and talents to a certain extent. "Industry-University-Research Institutes cooperative education" is the major means for these universities to join the industrial/regional innovation system. The **industrial background and regional high-level universities**, through the combination between the industry and the university and the close contact and cooperation with enterprises, realize deep understanding of the production in the region/industry; closely trace the forefront and key technologies in the actual

production and science & technology development; and actually join in handling the key tasks of production.

They highlight graduate education; and are the important training base for high-level innovative and application-oriented talents. From the perspective of faculty, taking the Project 211 HEIs for example, by 2005, the number of teachers who hold Doctor's Degree and Master's Degree had accounted for approximately 31% of the total number of teachers in these HEIs (Ministry of Education, 2005). In addition, the number of teachers who have the education background from other universities/colleges was increasing. In terms of training of doctors/Masters and undergraduates, by 2004, the number of doctoral and Master level students and undergraduates in the Project 211 HEIs accounted for 84%, 69% and 32% respectively of the total number of students at the same level in all institutions of higher learning all around the country. It must be pointed out that the "talents with qualifications of higher education institutions" provided by the **industrial background and regional high-level universities** have basically been transferred to "high-level innovative talents and application-oriented talents". Taking Beijing University of Technology as a case, one of the ideas of graduate students training is that "based in Beijing, integrated into Beijing, radiating to China, and for the world". The training of graduate students should be supported by the urban development of Beijing; we should think and study the scientific and technological problems that occur during the urban development of Beijing, and provide talents, technological achievements and guiding theories for the development of Beijing. Here is an example I would like to give. In the winter of 1965 when the university was just founded, the graduates of the 1960-grade took the "real swords and spears" graduation project design to study the actual problem. During the research, some students and teachers lived under the same roof and ate at the same table with workers in the factory. Thanks to their numerous efforts, the number and quality of the results of their graduation project that were exhibited in the Beijing Exhibition for the University Graduates' Graduation Project Designs of institutions of higher learning were next only to those of Tsinghua University and Beijing University of Aeronautics and Astronautics. This is a "miracle" for the student training of newly founded universities/colleges. It shows that the "high level" of the **industrial background and regional high-level universities** is reflected by their "characteristic". And the greatest "characteristic" exactly lies in the close contact with the regional/industrial innovation system. Such "characteristic" is the core competitive advantage of the **industrial background and regional high-level universities**, and also the permanent impetus of such universities for continuous development and self-improvement.

Regular bachelor-level universities and colleges

Beside the aforesaid two types of HEIs founded by the State, there are also regular bachelor-level universities and colleges are mainly providing undergraduate programmers (data listed below are collected from the site of China Education Ministry).

Regular bachelor-level universities and colleges are the largest component of China's higher education system, and also the main force of the mass higher education in China. About the characteristics of these different parts of the system, we can say that the first-class research universities are featured by "first-class" teaching and research, the **industrial background and regional high-level universities** are featured by their characteristic services and guidance of regional or industrial development, and the characteristics of regular bachelor-level universities and colleges are their great number, their emphasis on training the front-line application-oriented bachelors for the various industries of the society.

Based on the standards of the classification of Chinese HEIs that are recently released by the research team of Zhejiang University (U-ERO model) in 2009, we screened 464 regular bachelor-level universities and colleges, which accounts for 25% of the total number of HEIs that are classified with the same method, and 64.6% of the total number of universities with Bachelor's degree awarding entitlement. According to the data released on the website of the Ministry of Education of China, among the regular universities and colleges, a total of 614 universities and colleges offering undergraduate studies are under the local department, accounting for 56.3% of the total number of similar universities and colleges (1,090 in total, including independent colleges). Therefore, the regular bachelor-level universities and colleges form a large component of the pyramid of Chinese Higher Education System, and the main force for the mass development of China's higher education. With the expansion of higher education, the original regular bachelor-level universities and colleges also increased their enrollments. Meanwhile, the number of new universities and colleges at this level is also increasing. It indicates that students have a greater chance to enter and enjoy the regular higher education. Therefore, regular bachelor-level universities and colleges have trained a large number of application-oriented talents for China, and have timely provided new blood for the social development of China.

Vocational higher education institutions

Vocational higher education institutions mainly include the vocational universities, junior colleges and higher vocational colleges that focus on associates training

and do not have Bachelor's degree awarding entitlement. The vocational higher education institutions are the major institutions for the training of high-quality technology-oriented workforce. In terms of proportions of different types of manpower demands, the demands of the society for vocational and application-oriented workforce are far greater than that for academic research-oriented talents. Therefore, the vocational higher education institutions are the powerful supports for the social construction during the primary stage of socialism in China. The number of vocational higher education institutions is the greatest in the higher education system. And they have trained a great number of graduates. According to the statistical data released by the research team of Zhejiang University, the number of vocational higher education institutions totals 1,135 (Research Team of Zhejiang University, 2009). According to the data released on the website of the Ministry of Education of China, in 2009, there were 1,071 vocational higher education institutions, which trained 2,855,664 graduates.

Private universities and colleges

Private universities and colleges are an important component of Chinese Higher Education System. They provide vigor to the higher education system, and have trained a large number of graduates. According to the data published on the website of the Ministry of Education of China, in 2009, there were 812 private institutions of higher learning in China. Although these universities and colleges eliminate the funds shortage of public sector, their development is restricted because the number of enrolled students for higher education is decreasing in recent years. Due to the limited length of the article, we will not make more introductions here (data listed above are collected from the site of China's Ministry of Education).

Implementation of Connotative Development and Building a powerful higher education system

The foregoing paragraphs describe the classification of Chinese Higher Education System, and explain the position of Chinese institutions of higher learning. We can see that there is a gap of comprehensive strength between China, a developing country, and developed countries in the west. Then how to strengthen higher education and make higher education contribute more to the long-term development of

the State when the resources and strength are limited is the issue that draws almost all attentions of China's higher education circle, and is being studied. We hereby propose three suggestions based on the aforesaid analysis.

Construction of a more reasonable higher education system

Reasonable higher education system has two characteristics. Firstly, the higher education system is stratified, and the institutions of higher learning at various levels have a specific profile, and perform their respective duties. It is not practical for China to establish a large number of high-level research universities when the resources are limited. According to the actual situations, the number of research universities in China should be kept within 80-100. Such universities should focus on training high-level innovative talents. Other universities and colleges should train application-oriented and technology-oriented workforce that are needed by regional development, industrial development and social development. The structure of the higher education system should be coordinated with the structure of specialized personnel demanded by the society. On such basis, we should better realize the "flow" of students, teachers and knowledge among institutions of higher learning at various levels, which is the second aspect that reflects the reasonability of higher education system. The division of "education concepts" and "functions" should not obstruct the cooperation at the "practical operation" level between the HEIs of various levels. The HEIs of various types may realize the inter-school flow of students and knowledge through joint training, joint establishment of research teams and other means. In addition, we should improve the mutual recognition among institutions of higher learning at various levels, so as to improve the flexibility of student training paths.

Implementation of higher institution autonomy and first-class universities' locating in a diversified system

The word "First-class" talks about the performance of institutions of higher learning. The authors believe that the level of HEIs can not fully present their performance; it is rather reflected by their "characteristics". For an institution of higher learning, the characteristics specify its position in the higher education system. Meanwhile, such characteristics are also the bases for it to obtain the space and impetus for development. Therefore, "first-class" may describe the "characteristics" of various

levels and types; the word is not just an honor for high-level research universities that are generously funded by the State. Encouraging the "first class" under the "characteristics" is the way to perfect the diversification of higher education, and to perfect the stratification within the higher education system. In addition, HEIs at various levels should develop their own "characteristics", and seek for "unique path" for their development. By doing so, it is favorable for improving the initiative of the institutions of higher learning, so as to better promote the implementation of autonomy by the institutions of higher learning.

Implementation of social education

Under the background of globalization and market economy, higher education is no longer the "university education" that is undertaken by a few "universities" on the fringes of society. Instead, it is closely related with the social development at all times. Higher education institutions need to seek impetus for their own development from the social development. Meanwhile, we should guide the social development through HEIs' own development and continuous improvement. "Social demands" is the issue to which attention must be paid. Therefore, developing higher education institutions run by social forces and supporting the development of non-public institutions of higher learning are the inevitable trends in the development of higher education. For the Chinese Higher Education System that focuses on public institutions of higher learning, introducing the mechanism of society-running may attract the attention of HEIs at various levels to "social demands"; meanwhile, it can provide chances of higher education for students that need to accept higher education. The educational authority should provide more support and guidance to the mechanism of society-running non-public institutions of higher learning. Meanwhile, the education policies should guide the society to better recognize the non-public institutions of higher learning, gradually mobilize the initiative of various sectors of the society, and perfect the mechanism of society-running.

References

Pan, M. Y. & Wu, M. (2003). The Classification and Localization of Higher Education Institutions. *Fudan Education Forum*, (3), 6.

Liu, X. J. (2003). On the Identity of Higher Education Institutions. *Journal of Higher Education,* (1), 25.

Zou, X. P. (2003). On the Elite Higher Education System and Mass Higher Education System. *Journal of Higher Education,* (1), 25.
Wang, S. Y. & Kong, G. C. (2009). Review and Rethinking on the Construction of Research Universities in China. *Peking University Education Review*, (1), 58.
Office of Intra-Department Coordination Team for the Project 211. *Report on the development of the Project 211, 1995–2005*. Beijing: China Higher Education Press.
Qiu, J. H. (2007). *Evaluation Report of World-class Universities and Subjects Competitiveness.* Beijing: Science Press.
Shan, H. H. (2009). Building High-Level Universities with Distinct Characteristics based on Advantages and Scientific Orientation. *China Higher Education,* (7), 11.
Office of Intra-Department Coordination Team for the Project 211(2007). *Report on the Development of the Project 211, 1995–2005*. Beijing: China Higher Education Press.
Research Team of Zhejiang University (2009). *On the Classification of China's Institutions of Higher Learning.* Beijing: China Higher Education Press.
Website of the Ministry of Education of China. http://www.moe.edu.cn.

Roles of universities and innovation systems in China

Chapter 8

The role of university in firm's innovation network: empirical evidence from Southwest China

Ju Liu

Introduction

Innovation process is now more likely to be considered as a social event which happens in a relationship structure that is social network rather than a sole technological phenomenon (Lundvall and Christensen, 2004). Innovation is not an isolated process of individuals or firms but is the outcome of the interaction between firms, customers, suppliers, competitors and various other private and public organisations such as universities in a system (Lundvall, 1988, 1992, 2007). In the past two decades, innovation network has become the most distinctive organisational characteristic of innovation and has attracted serious attention from researchers, practitioners and policy makers globally.

University as knowledge infrastructure should be an important actor in innovation networks (Mowery, 2005; Lundvall, 2007). The national innovation system approach (Freeman, 1987; Lundvall, 1992; Nelson, 1993) and the Triple Helix model (Etzkowitz and Leytesdorff, 1997) are the most well-known literatures which emphasise such important role of university with the main function of producing both trained personnel and advanced knowledge to fuel innovation.

Empirical studies based on firm level data show that the university-industry interaction improves innovation performance. It has been found that knowledge and technology transfer activities between universities and industry have a positive effect

on different measures of innovation performance, such as the propensity of patenting, number of patent applications, R&D intensity, and sales share of innovation products. This was particularly the case for R&D cooperation with universities and/or other public research institutions in European countries (Becker, 2003; Fritsch and Franke, 2004; Monjon and Waelbroeck, 2003; Belderbos , 2004; and Lööf and Broström, 2006). Studies based on American firm-level data also found positive relation between knowledge-infrastructure-industry cooperation and innovation performance (Adams et al., 2003).

The great potential of university-industry interaction for innovation has been well recognised by policy makers and practitioners in China. A knowledge creation system combining universities and R&D centres, based upon openness, mobility, collaboration and competition has been acknowledged as an important facet of a national innovation system in the National Medium-and-long-term Science and Technology Development Plan (2006-2020) of China since 2006. This plan aims at building up a strong national innovation system in China. Among the actors, firms are, for the first time in the history of S&T policy in China, put at the centre, and the innovation system is to be built with firms as the principal players, but operating in industry-university-public R&D collaboration (Gu, et al, 2009).

Hence, what the role of universities in firms' innovation networks is, where the problems and challenges are, and how to address the problems and challenges, become important questions that researchers, practitioners, and policy makers are confronting in China.

By means of in-depth case study method, this study investigates the innovation networks of three leading manufacturing companies in Sichuan province of Southwest China. It adopts an innovation system approach as the theoretical framework to identify the network actors and to look into the context in which the networks are embedded. It also uses social network analysis as the analytical tool to explore the structural position of the universities in the case firms' innovation networks. It tries to understand the role of universities in the firms' innovation networks in the context of China's higher education system, and to answer the questions why it is like that and how to improve.

The rest of the chapter is structured as follows. First it will explain the theoretical framework and analytical tool. Second it will elaborate the method of this paper including design of case study, selection of firms, and collection of data. Third it will analyze the cases and bring up with the findings on what the role of universities is, why it is like that, and how to improve the situation. And in the final section it draws the conclusion and makes some policy recommendations.

Theoretical framework and analytical tool

Theoretical framework

Innovation system approach is adopted as the theoretical framework of this study (see Figure 1) to look into the important issue of innovation which is the innovation network and the context it is embedded in.

The innovation system approach highlights the interaction between different actors and the context in which such interaction takes place. It provides the "tool of inquiry" (Nelson and Winter, 1982) to focus the research on the most important issue of innovation, namely the innovation networks and the context they are located in. Actors in an innovation system are identified as the core of innovation system (Lundvall, 2007) which includes the firms in interaction with other firms and knowledge infrastructure such as universities and research institutes, as well as government agencies and other intermediaries. The context is considered to be the wider settings of innovation system (Lundvall, 2007) which includes education systems, labour markets, financial markets, IPR regime, competition in product markets and welfare systems.

This study focuses on the core of the innovation system that is the firm's innovation network and one of the six wider settings that is higher education system. It sets out to understand the role of university in the firms' innovation networks in the frameworks of the higher education system in China.

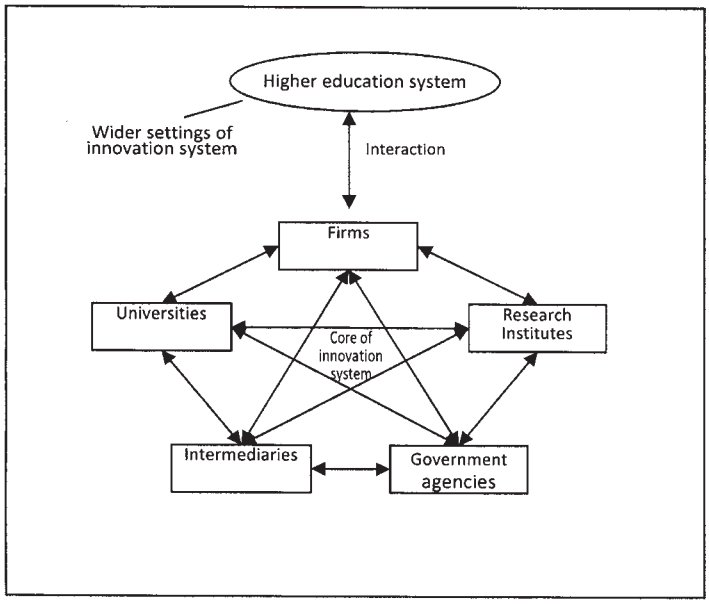


Figure1. The theoretical framework

Analytical tool

The social network analysis (SNA) is adopted as the analytical tool to map the innovation networks of the case companies and to study the position of the universities in the firms' innovation networks.

The social network analysis has been widely used in innovation studies thanks to the interaction-dependence and social attribute of innovation. The social network perspective encompasses theories, models, and applications that are expressed in terms of relational concepts or processes (Wasserman and Faust, 1994). Social network analysis focuses on uncovering the patterns of people's interaction. It is based on an assumption of the importance of relationships among interacting units, on the intuitive notion that these patterns are important features of the roles of the actors who display them.

This study uses the software of Ucinet to map the innovation networks of the case companies and detect the positional attributes of the universities which reflect the role of the universities in the firms' innovation networks.

Method

Design of case study

This study employs multiple case study method with embedded design.

Case study is an empirical study. It studies an on-going social and economic phenomenon which cannot be separated from its context (Yin, 2003). A case study focuses on the situation and cause of a certain phenomenon by investigating the empirical evidences. It is the most suitable method which can be used to answer the questions of "why" and "how" (Yin, 1981). This study used a case study method to investigate the empirical evidence of the role of universities in firms' innovation networks and to understand why the position is like that and how to improve it.

The embedded design of the case study increases the complexity and accuracy of data (both qualitative and quantitative) and thereby improves the robustness of the results (Jick 1979; Anand et al., 2007). It also helps to establish corroboration of critical information and avoid potential problems of data bias. This study used multiple units/levels of analysis, such as connections within firms, connections between firms and other organisations, and elements of the higher education system. It also used multiple sources and techniques, such as questionnaire survey among senior executives, in- depth multi-level key informant interviews in firms, government

agencies, and non-governmental organisations, experts in universities and research institutes, follow-up emails and phone conversations, archives, websites, internal reports, internal documents and press news.

Selection of firms

Three large high-and-medium-tech manufacturing companies with strong innovation capabilities were chosen as case companies. They are Grace, DEC, and ERZ. Case firms were selected based on the principle of comparability. I controlled four criteria which have fundamental influence on firm's innovation process according to the literature: (1) firm's innovation capabilities; (2) firm's size; (3) market structure in which the firm operates; and (4) technological regime in which the firm is involved.

Only companies with strong innovation capabilities were selected as innovation activities in these companies are more active and it is easier to observe their innovation networking behaviour and collect data compared to that of companies with low innovation capabilities. The technological innovation performance, which is measured by the percentage of the sales of new products to total sales in the past three years, is used as the indicator of innovation capabilities of the case companies.

Only large companies (with the number of employees > 1000) were selected as the firm's size matters when it comes to innovation (Acs and Audretsch, 1987. Cohen and Klepper, 1996; Rogers, 2004). Large firms and small firms behave differently when they innovate. I chose large companies because their innovation networks are usually broader than in small companies. It is also easier to observe their innovation networking behaviour and to collect data.

Only companies operating in oligopoly market were selected (HHI > 0.10). The market structure (Kamien and Schwartz, 1982) refers to the state and characteristics of a market with respect to the degree or intensity of competition among buyers and among producers. It is argued that competition urges innovation and monopoly protects the profitability of innovation. Herfindahl-Hirschman-Index (HHI) is used in this study to identify the structure of the market in which the case companies are operating. HHI is the measure of market concentration which is the most important indicator of market structure. HHI equals to the sum of S_i^2, where S is the market share of firm and i competing in the market. In this research only the top four companies with biggest market share are considered.

Only high-and-medium-tech companies (R&D intensity between 4% and 9%) were selected. The technological regime (Dosi, 1982; Nelson and Winter, 1982; Malerba and Orsenigo, 1996) is characterized by the opportunity, appropriability,

and cumulativeness. It is also characterized by the complexity of knowledge base. It is argued that the specific features of technological regimes affect the specific patterns of innovation process as well as the structure of innovation networks (Malerba and Orsenigo, 1996). In this research I used the R&D cycle, which is related to the changing speed of technology, to indicate the opportunity, appropriability, and cumulativeness of the technology in which the firms are involved. It is measured by the average time period for developing a significant new product in the industry. I also used R&D intensity to specify to what extent the technology of the firms is knowledge-based. R&D intensity is measured by the ratio of expenditures by a firm on research and development to the firm's sales.

The overview of the case firms is shown in Table 1.

Table 1. Overview of the selected case companies

Firm	Main product	Firm size	Innovation performance			Market structure					Technological regime	
		Number of employees	Percentage of the sale of new products to total sale			Market share of the 4 biggest firms in the industry				HHI		
			2007	2006	2005	Case firm	Firm A	Firm B	Firm C		R&D cycle (months)	R&D intensity
Grace	Chemical fibre	12000	48%	46%	51%	29%	28%	13%	11%	0.19	12-24	6%-9%
DEC	Power equipment	9000	60%	50%	55%	30%	30%	25%	5%	0.25	20-36	4%-5.5%
ERZ	Heavy machine	12650	72%	69%	67%	45%	25%	n/a	n/a	0.27	12-24	6%-9%

Collection of data

The study adopted multiple data sources and data collecting techniques. One questionnaire survey was administered to elicit responses from seven top level senior managers (most of them are CEOs or VPs of technology). 26 interviews were conducted among both top and middle level senior managers (including the interviews with seven top level senior managers to fill up the questionnaire). The middle level managers interviewed were usually R&D managers or innovation managers. The main thrust was to clarify and verify the answers to the questionnaire and to corroborate critical statements made by respondents during questionnaire survey. In addition, the interviews aimed at collecting information to complement that of gathered through questionnaire survey. I also interviewed government officials and

other experts such as university researchers and industrial practitioners in other companies for better understanding the context of higher education in the region. This ensured validity and robustness of the collected data. Each interview lasted from one to three hours.

The potential informant bias is addressed in four ways. First, I selected highly knowledgeable informants from multiple hierarchical levels of the firms (i.e. top and middle level managers of case companies and experts from other companies, universities, and government agencies). Second, I used "courtroom questioning" technique to focus on factual accounts (Lipton, 1977; Huber and Power, 1985). I asked the informants to specify what kind of activities have been carried on in each specific relationship so as to ensure that the informant did not mix the relationship for innovation with those for routine work, such as production. Third, I gave anonymity to the informants and their firms on request to encourage candour. Fourth, I showed the potential benefit of the research to the informants to increase their interest towards participating. The informants were very motivated to give accurate information because they knew that networking is critical to the companies' innovation but they did not know the very precise picture of the innovation network of their companies.

Case analysis

This section will first analyse the higher education system in China as the context that the case firms' innovation networks are embedded in. Second, it will explore the position of universities in the case firms' innovation networks by mapping and detecting these networks' socialgram. Third, it will discuss the reason why universities' role in the innovation networks is like that and how to improve such situation.

Analysing the higher education system in China: what is the context the networks are embedded in?

China's higher education system consists of regular higher education institutions and higher education institutions for adults. Universities are mainly public ones which are administrated by the Ministry of Education or by the local government.

China's higher education system has made significant progress since 1980s in terms of student enrolment, financial investment, and research and development activities (see Figure 2, 3, and Table 2).

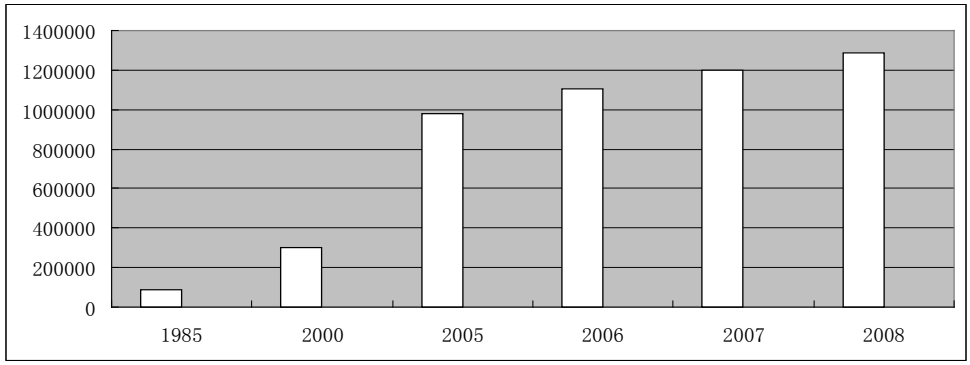


Figure 2. Student enrolment in China's higher education system

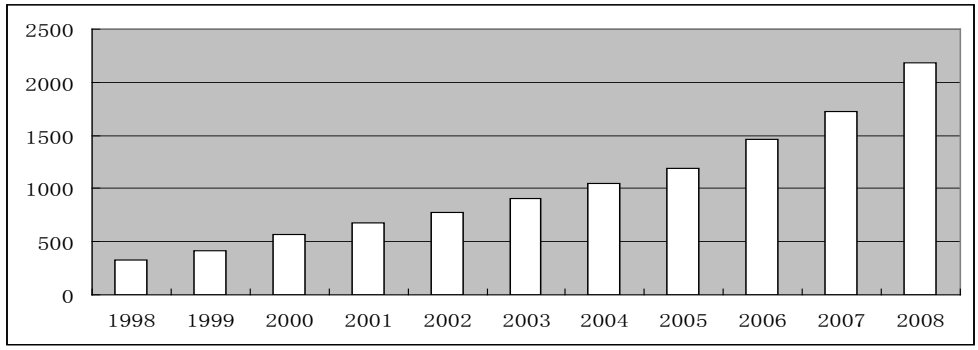


Figure 3. Investment in higher education system (in 10,000 RMB)

Table 2. R&D activities in higher education system

	2003	2004	2005	2006	2007	2008
Research institutes	3332	3681	3936	4154	4502	5159
R&D personnel(1000 person year)	189	212	227	242	254	266
R&D expenditure(billion RMB)	16,23	20,09	24,23	27,68	31,47	39,01
Scientific paper	612738	668520	728082	830948	905985	964877
Patent	3954	6399	8843	12043	14111	19248

In spite of the significant progress, China's higher education system is still facing big challenges.

First, China's higher education system is big but not strong. Many important indicators of the higher education system, such as gross enrolment rate and the percentage of education investment to GDP, are much lower than the world average level.

Second, the disparity in the development of China's higher education system is still serious. The development level of higher education system in terms of scale, investment, infrastructure, personnel, and research and development capabilities varies significantly across the country, that is, it decreases consistently from the eastern area via the middle of China to the western provinces (Gao and Hao, 2008). The Sichuan province, for example, had 79 universities in the by 2008. The number of universities per million populations was 0.91 that put the province's ranking the last in China[1]. There are not enough specialised competences in the universities that are relevant to innovation in the case companies.

Third, universities' capability for R & D and commercialisation of research are still weak. The cooperation between universities and industry is still insufficient. The percentage of research funding from industry in the total research funding decreases over time (See Figure 4). According to statistics, in 2006, only 17% of the research in terms of time was done in the universities. These numbers are much lower than the level of EU countries.[2]

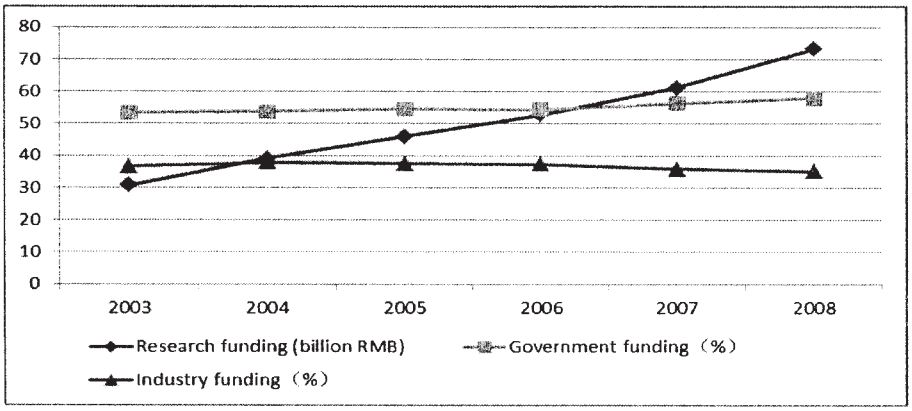


Figure 4. University research funding and its sources in China's

To summarise, China's higher education system is characterised by big scale, low investment, and imbalanced development. Sichuan, where the case companies are located, is a province with relatively weak higher education system compared to the other regions in China.

1. Source: China Education Statistics 2009
2. Source: Science, technology and innovation in Europe. 2007 edition, European Commission.

Mapping the case firm's innovation networks: what is the role of universities?

Innovation network in this study refers to a set of relationships inside and outside of the case company aiming at technological innovation including both product and process innovation. The case companies' innovation networks are weighted and undirected whole networks.

Actors of a firm's innovation network consist of both internal and external actors. Internal actors were identified as different functional departments or groups whose functions are marketing, financial, R&D, and human resources (HR) etc. within the firm. This taxonomy follows the value chain analysis by Porter (1985). External actors include other organisations outside the case company, such as universities, research institutes, investment institutions, customers, suppliers, competitors, government agencies and so on. This category follows the taxonomy of Lundvall (2007) and OECD (1999) guided by innovation system approach. The names and abbreviations of the internal and external actors are shown in Table 3. In some case companies, there is no single department but a group of people from different departments functioning as a managerial body for planning and organising innovation activities.

Table 3. Name and abbreviation of actors in the innovation networks

Internal actors		**External actors**	
R&D	R&D Department	CST	Customers
PRD	Production Department	SPL	Suppliers
HR	Human Resource Department	CPT	Competitors
MKT	Marketing Department	INV	Investment institutions
FIN	Financial Department	IA	Industrial Associations
LOG	Logistic Department	GOV	Government
I M	Innovation Management Department/ Group	UNI	Universities
		RI	Research Institutes
		CSL	Consulting Companies

The ties of the innovation network are identified based on Oslo Manual, the 3rd edition (OECD, 2005). They include both formal and informal relationships for:

1) Access to openly available information without the need to pay for or with marginal fee for the access, such as membership in trade associations, attendance at conferences, and subscriptions to journals;
2) Acquisition of technology and knowledge without active cooperation with the source, such as purchasing machinery, equipment, hiring people, or using contract research and consultant service; and
3) Active participation in joint innovation projects.

The relational data of the ties were collected through a roster recall method (Wasserman and Faust, 1994). Each case company was presented with a complete list (roster) of the actors in the network and was asked the following questions:

Q1: Do the following actors contact each other in your company's technological innovation activities?
Q2: If yes, what is the strength of these connections in terms of their intensity , frequency, and trust between each other? Please give a score to represent the strength of the connections:

Strength	Very strong	Strong	Normal	Weak	Very weak	No connection
Score	5	4	3	2	1	0

Two node centrality measures are used to indicate the centrality of the universities in the case firms' innovation networks, namely Freeman degree and betweenness. Freeman degree is a measure of the connectedness of a specific actor in a local environment. It measures the centrality of the node in the network and shows the potential of the node's positional power. It is used to identify who are the most well connected actors in the innovation networks. Betweenness is a measure of the extent to which a node can broker transactions among the other actors in the network.

Based on the collected relational data, the author drew the socialgrams of the three case companies' innovation networks by the social network analysis software Ucinet (See Figure 5). The dots represent the actors in the innovation network. The size of the dots is related to the Freeman degree of the actors. The lines represent the relation or tie between different actors. The thickness of the lines is related to the strength of the ties.

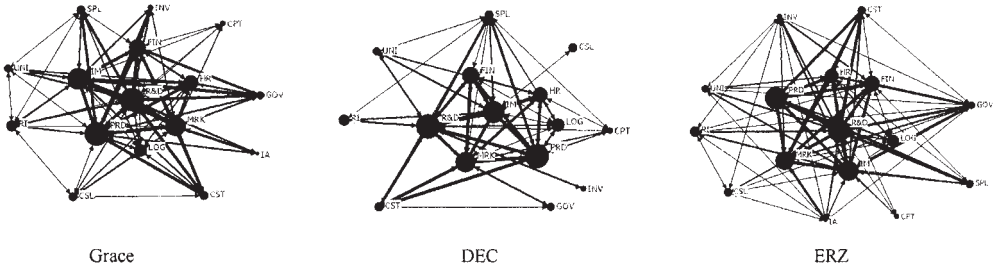


Figure 5. Socialgrams of case firms' innovation networks

There are two main findings as follows:

In general, universities play a small and peripheral role in the case companies' innovation networks.

As shown in Figure 5, none of the companies have universities in the core of their innovation networks. In terms of Freeman degree, the universities belong to the group of least connected actors in the innovation networks (see Figure 6) which means universities did not work much as participants together with the case company and other actors for the focal firm's innovation. In terms of betweenness, the universities also belong to the group with lowest betweenness in the innovation networks (See Figure 7) which means they do not have many chances to function as brokers for other actors in the focal firm's innovation network.

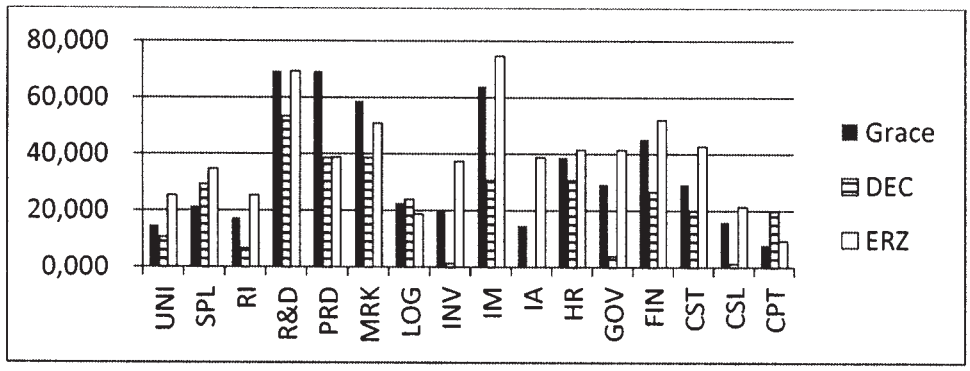


Figure 6. Freeman degree of the actors in the case firms' innovation networks

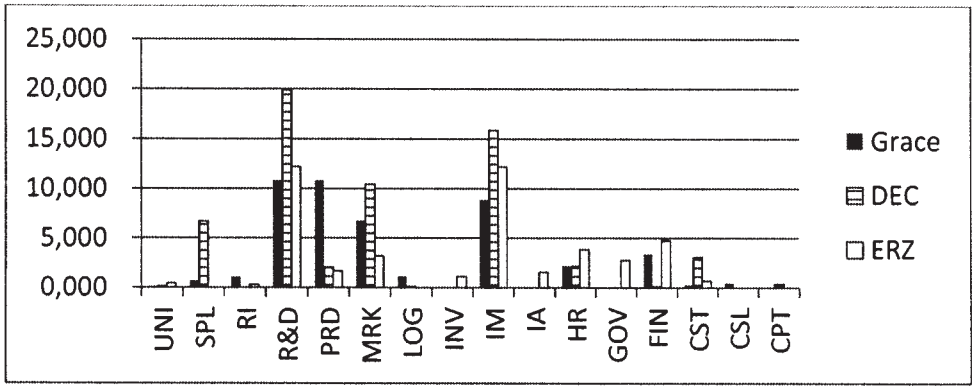


Figure 7. Betweenness of the actors in the case firms' innovaiton networks

In ERZ's innovation network, the universities are better connected than in the networks of the other two case companies

It is found that in ERZ's innovation network, universities are better connected than the universities in other two companies' innovation networks (see Figures 6 and 7). As shown in Figure 8, universities in ERZ's innovation network have connection with ERZ's Financial Department (FIN), investors (INV), industrial associations (IA), and government agencies (GOV) which the other two companies do not have. Universities in ERZ's innovation network also have stronger connection with HR Department (HR) and Innovation Management Department (IM) of the company than the other two case companies.

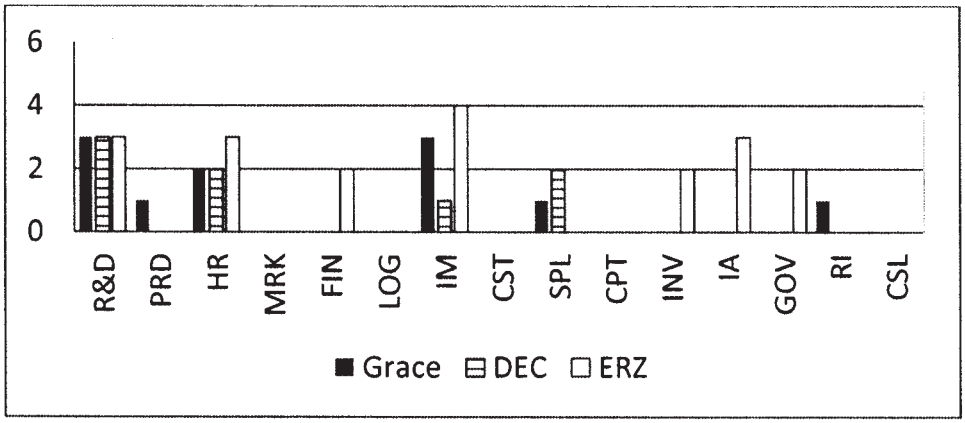


Figure 8. Strength of connections between university and other actors in the case firms' innovation networks.

Even though such difference between ERZ and the other two case companies does not totally change the peripheral position of universities, it does provide important insight for understanding how to improve the university-industry interaction for innovation. This will be elaborated in the following section.

Understanding the role of universities in the case firms' innovation networks: why it is like that and how to improve?

In this section, firstly, I will explore why university's role is small and peripheral in the case firms' innovation networks based on the lessons from Grace and DEC. Secondly, I will discuss how to improve university-industry interaction based on the successful experience of ERZ.

*Why do universities play small and peripheral roles in firms' innovation networks?*Three main reasons are found to explain why universities play small and peripheral roles in firms' innovation networks based on the lessons from Grace and DEC.

First, research and development capability of universities does not meet the needs of industry. The case companies have to do innovation by themselves or go to other provinces to look for collaborators which is costly and far away. The then Vice President of DEC commented:

> Universities in Sichuan are not very strong in the field of power equipment manufacturing. We can hardly find any competent university to collaborate with. We had to resort to the universities in Xi'an and Beijing. Even so our collaboration is very limited. The long geographic distance brings great difficulty to the communication between us. The company is very keen on developing cooperation with universities but the situation is that the R&D capability of domestic universities cannot match our standard. We have always had cooperation with universities but these collaborations are just restricted to small scale. So far we have not had big joint project with universities.

Second, university professors and researchers are in lack of motivation to cooperate with industry. The evaluation criteria for professors' performance are mainly the number of publications and patents. Not many researchers and professors in the universities are really interested in developing products for the market. Recently, four of the main universities in Sichuan province pledged to build themselves as (pure) research-based universities. None of them planned to be innovative or entrepreneurial . The pure academic orientation of universities hinders their interaction with industry for innovation. The director of Department of Science and Technology Management in Grace said:

> We had tried very hard to cooperate with one of the universities in our province. We invested heavily but failed badly. The reason is that our company and university professors had different goals and interests. We wanted new product which is profitable in the market. They wanted papers and patents. We tried several other universities, but few were successful.

Third, the administration of university cuts up the links between universities and industry. Universities in China are mainly either administrated by the Ministry of Education or by different levels of regional government. Private universities are much weaker than the public ones in terms of quantity and quality. Universities have been historically considered as ivory towers which are to some extent isolated from the industry. It has been long criticized in China that the universities are more like government bureaucracy rather than active actors in innovation system. The director of Chemical Fibre Division of Sichuan Industry and Economic Committee said:

> Sichuan does have universities. For example, in the field of chemical fibre, we have Sichuan University with School of Textile and Research Institute of Textile. We also have Chengdu College of Textile. But these universities have been making only limited contribution to the development of Sichuan's textile industry. For a long time, there is not much interaction between universities and industry. There is still a great gap between what the professors do in the laboratory and what the companies want in their production line. Traditionally university and industry are two different worlds which are in serious lack of interaction. Personnel exchange, especially those from industry to universities, is very rare. Usually the highly achieved engineers or managers can only be invited as part-time guest lecturers, but it is almost impossible for them to have formal position in universities due to to the bureaucratic regulation. Now things are changing but still we have a long way to go.

Last but not least, mutual trust has not been built up between universities and industry due to the lack of interaction between universities and industry in the past. It is difficult to have mutual understanding and common agenda between university researchers and professors, and company engineers and managers. The lack of structures of domination and/or patterns of coalition-building also results in sectionalism and rogue behaviour. One example is the weak IPR regime in China. The Vice President of DEC said:

> We want to have a full range of cooperation with universities, but we have to be careful as we had bad experience. For instance, once we invested huge money to build up a

> laboratory in a university expecting to have long term cooperation with them. But when the professors' students graduated, the project had to stop because there was nobody to work on it. Since then we learned the lesson and decided not to have long term project with any university. Once the trust is damaged it is difficult to rebuild. Another issue is the IPR. Sometimes we deliberately distort the real purpose of the project we subcontract to the universities. We do not want them to know what we are doing. The main principle of our university cooperation is avoiding risk and being dominant. Only small and peripheral project do we subcontract to universities, the core R&D is restricted within the company.

To summarise, it appears that universities' small and peripheral role in firms' innovation network results from their incompetent R&D capability, the lack of motivation, the administration of university, and the mistrust between them and the industry.

How to improve university-industry interaction?

Although the position of universities is still peripheral , universities do have better connections in the innovation network of ERZ compared with the universities in the innovation networks of Grace and DEC.

First, in the technological field of ERZ, there is a strong university in the region. The general situation of higher education system in the region of Sichuan is poor but in the technological field of ERZ, namely the machinery and material science, there is a university that has strong R&D competence for ERZ's innovation. ERZ's strategic partner Chongqing University is a leading university in machinery and material science. Chongqing is also close to Deyang where ERZ is headquartered. The strong presence of the university in the heavy machine industry in Sichuan is because this region had been the target area of the Three-tier-construction (San-xian-jian-she) Project since the 1950s when China moved all the heavy industries to inland provinces to avoid possible attack from the former Soviet Union.

Second, the researchers and professors from the university stationed in the company have been working face to face every day with engineers and managers in the factory. Instead of shortly visiting the company and going back to work in university laboratory, the university researchers and professors stayed in the company working with the company staff every day in the workshop. This is totally different from the old pattern of university-industry cooperation in which each partner goes his/her own way. The chief engineer of ERZ commented:

> Before, our cooperation with universities suffered the same problem as many companies did. Usually the professors together with their students came to pay a two-day visit. Then they took the project back and worked in their laboratory. A couple of months later they came back with blueprints and technical drawings which usually ended up on the shelf. Now we have a new model of cooperation thanks to the strong support from the professors in Chongqing University. The university research team come to stay in our factory and live in our dormitory. That's real active cooperation. The day-to-day and face-to-face interaction makes a big difference. Together with Chongqing Universities we have already solved many technological problems which troubled us for a long time. If universities and our company continue this cooperation model, I believe that we will have more innovation in the future.

The successful collaboration model of ERZ sheds light on the answer of how to improve university-industry interaction.

First is to increase the availability of complementary capabilities of the universities in the region. On the one hand, the universities should build up their R&D capability toward the direction of commercialising new ideas in order to match the needs of firm's innovation. On the other hand, when promoting a certain industry, regional policy should help to build up knowledge infrastructure which provides related knowledge for fuelling innovation in the industry.

Second is to decrease social and geographic distance between universities and industry. Face-to-face and day-to-day interaction is important to build up mutual understanding not only on the technological side but also on the social side. It helps to build up mutual trust which is fundamentally crucial to the success of university-industry cooperation.

Conclusions

This study set out to understand the role of universities in firms' innovation networks through the cases of three leading manufacturing companies in southwest China. It is found that the universities' role in the case firms' innovation networks is small and peripheral.

Based on the unsuccessful practice in the cases, it is found that the reasons lie in the weak R&D capability of the universities, the lack of motivation among the researchers and professors, the administration of universities, and the mistrust between the universities and the industry.

Based on the successful experience in the cases, it is suggested that to improve the situation of universities in the case firms' innovation networks, the availability of complementary capabilities in the universities should be increased while the social and geographic distance between universities and industry should be decreased.

The findings and suggestions of this study are generated from a limited number of cases in a specific region. So, it is difficult to generalise the research findings or to extend them to broader industrial and regional context. However, it adds new knowledge and provides new insights for understanding the role of university in firm's network of innovation. Future research can be conducted toward the direction of comparative study in a different regional context, in a different industry, or in a different type of firms, such as SMEs.

Reference

Acs, Z.J. and Audretsch, D.B. (1987), Innovation, Market Structure, and Firm Size, The Review of Economics and Statistics, 69(4): 567–574

Adams J. D., Chiang E. P., and Jensen J. L. (2003), The influence of federal laboratory R&D on industrial research, Review of Economics and Statistics, 85(4): 1003–1020.

Anand, N., Gardner, H. K., & Morris, T. (2007), Knowledge-based Innovation: Emergence and Embedding of New Practice Areas in Management Consulting Firms. Academy of Management Journal, 50: 406–428.

Belderbos R., Carree M., and Lokshin B. (2004), Cooperative R&D and firm performance, Research Policy, 33(10): 1477–1492.

Cohen, W.M. and Klepper, S. (1996), Firm Size and the Nature of Innovation within Industry: The Case of Process and Product R&D, The Review of Economics and Statistics, 78(2): 232–243

Dosi, G. (1982), Technological Paradigms and Technological Trajectories. A Suggested Interpretation of the Determinant and Direction of Technological Change, Research Policy, 11(3): 147–162.

Etzkowitz, H. and Leytsedorff, L. (1997), Universities in the Global Economy: A Triple Helix of Academic-Industry-Government Relations, London: Croom Helm.

Freeman C. (1987), Technology Policy and Economic Performance: Lessons from Japan, London: Pinter

Fritsch M. and Franke G. (2004), Innovation, regional knowledge spillovers and R&D co-operation, Research Policy, 33(2): 245–255.

Gu, S., Lundvall, B. A., Liu, L., Malerba, F., and Serger, S. S. (2009), China's System and Vision of Innovation: An Analysis in Relation to the Strategic Adjustment and the Medium- to Long-term S&T Development Plan (2006-2020), Industry and Innovation, 16(4): 369–388.

Huber, G. P. and Power, D.J. (1985), Retrospective Reports of Strategic-level Managers: Guidelines for Increasing their Accuracy. Strategic Management Journal, 6:170-180

Jick, T. D. (1979), Mixing Qualitative and Quantitative Methods: Triangulation in Action. Administrative Science Quarterly, 24: 602–611.
Kamien, M.I. and Schwartz, N. L. (1982), Market Structure and Innovation, Cambridge University Press, Cambridge
Lipton, J.P. (1977), On the Psychology of Eyewitness Testimony. Journal of Applied Psychology, 62:90-95
Lööf H. and Broström A. (2006), Does knowledge diffusion between university and industry increase innovativeness? CESIS Electronic Working Papers Series No. 21, Stockholm: The Royal Institute of Technology.
Lundvall B.-Å. (1988), 'Innovations as in Interactive Process: From User-Producer Interaction to the National System of Innovation', in Dosi G. (ed.), Technical Change and Economic Theory, London: Printer.
Lundvall B.-A. (ed.) (1992), National Systems of Innovation: towards a theory of innovation and interactive learning, London: Pinter.
Lundvall B.-A. and Christensen J.L. (2004), Introduction: Product Innovation- on Why and How it Matters for Firms and the Economy in Christensen J.L., and Lundvall B.-Å.(eds.), Product Innovation, Interactive Learning and Economic Performance, Amsterdam: Elsevier.
Lundvall, B.A. (2007), National Innovation Systems - Analytical Concept and Development Tool, Industry & Innovation, Taylor and Francis Journals, 14 (1): 95–119.
Malerba, F. and Orsenigo, L. (1996), Schumpeterian Patterns of Innovation are Technology Specific, Research Policy, 25(3): 451–478.
Monjon S. and Waelbroeck P. (2003), Assessing spillovers from universities to firms: Evidence from French firm-level data, International Journal of Industrial Organization, 21(9): 1255–1270.
Mowery, D. C. (2005), Universities in National Innovation Systems in Fagerverg J., Mowery D.C., and Nelson R. (eds.), The Oxford Handbook of Innovation, Oxford: Oxford University Press.
Nelson R.R. and Winter S., (1982), An Evolutionary Theory of Economic Change, Cambridge, Massachusetts, The Belknap Press of Harward University Press,
Nelson, R. R. and Rosenberg, N. (1993), Technical Innovation and National Systems, in Nelson, R. R. (eds). National Innovation Systems: A Comparative Analysis. Oxford and New York: Oxford University Press
OECD. (1999) Managing National Innovation Systems
Porter, M.E. (1985), Competitive Advantage: Creating and Sustaining Superior Performance, The Free Press, New York
Rogers, M. (2004), Networks, Firm Size and Innovation, Small Business Economics, 22(2):141–153 Published by: Johnson Graduate School of Management, Cornell
Wasserman, S. and Fause, K. (1994). Social Network Analysis: Methods and Applications. Cambridge: Cambridge University Press
Yin, R.K. (1981), The Case Study as a Serious Research Strategy, Science Communication, 3(1) :97–114
Yin, R.K.. (2003),Case Study Research: Design and Methods, 3rd ed. Sage Publications.

Chapter 9

The role of research universities in national innovation system in China

Xiaoguang Shi & Yongxia Ma

Introduction

The theme of 2nd Sino-Finland Forum on Higher Education –*Transformation of Higher Education in Innovation Systems* is quite significant and necessary to lead participants coming from both sides to focus on this global concern. The reason is simple, partly because the issue of how to build an innovation oriented country becomes a "hot" discourse, attracting global attention in both academic communities and public circles worldwide. Many countries have been making efforts to build the national innovation systems of their own, intending to enhance states' competitiveness in a globalised knowledge economy (Kinji Gonda et al., 1994, Liu, B.C, 2009) Without exception, as the largest emerging country, China has put the issue of building the national innovation system (NIS) on top of the agenda since the late 1990s. Currently, similar to what it looks like in the most innovation oriented nations, China has adopted not only a conceptual framework of NIS but also an operational approach to enhance the country's competitiveness and socio-economic development. In the past decade, much work in this regard has been done in China, but little could be searched out in Anglophone literature and read by non-Chinese speaking readers beyond China. For most of Westerners, China's NIS might be very unfamiliar due to their language obstacle. Therefore, this article aims at using the opportunity to introduce something of China's NIS and of what roles the research universities (RUs) can play in promoting the construction of NIS. Explicitly, the

article tries to adopt the descriptive approaches as methodology to examine the relevant issue. Some of the data from documents, in-depth interviews, case studies etc, will be used to expound how the NIS becomes both a conceptual and operational framework in China. The focus will be on the context of how Chinese RUs are made a building block of the NIS, and of what roles they can play in the process. Finally, the article will discuss the challenges that the Chinese RUs are facing, and possible solutions that might be available to solve the problems.

Background

NIS as a conceptual framework in China

Theoretically, the term of NIS in Chinese context is an imported concept, which was not well known to both academia and the general public until the early 1990s. The year of 1985 marked a division between the old paradigm and the emerging one when an important document – *the Decision on Reforming System of S&T (science and technology)* was released. Since then, the discourses regarding the origin and changes of NIS emerged as times required and then became popular in China. After plenty of Western thoughts and theories were introduced into the Chinese academia, such as "*Innovation and Entrepreneurship"* (in 1930s by J.A Shumpetrer,), "*Framework of National Innovation System"* (in 1980s by Christopher Freeman & in 1990s Bengt-Ake Lundvall,), as well as *"Triple Helix Model"* (in 1990s by Loet Leydesdorff & Henry Etzkowitz,) and the like, many Chinese scholars began to make efforts to conceptualize China's NIS based on Chinese cases and experiences. Tang Shiguo's paper (1993) was found to be the first academic publication in Chinese literature database, which examined the evolution of China's NIS by focusing on its origin and changes in 1980s. In 1990s, various studies on NIS moved forward, and a great deal of exploration in this regard permeated into different disciplinary fields of studies. As a result, lots of outcomes and publications had been generated. In December, 1997, a research report – the *Establishment of a National Innovation System to Meet the Era of Knowledge-based Economy* was drafted and released by the Chinese Academia of Science (CAS). The report analyzed the milieu surrounding China's NIS construction, both inside and outside the country, and also expounded the significance and necessity of conducting this work. The report was comprehensive and constructive, partly because it reflected on the national strategic plan by describing what the Chinese NIS looks like, particularly in terms of the structure

and functions, the goals and purposes, the policy and initiative as well as the implementation and action options. Meanwhile, the report gave quite a representative and influential definition. As pointed out by Prof. Lu Yongxiang, the President of CAS, during his interview to public media, the report defined NIS as "a network or framework made up by some units, such as industrial sector, academe, CAS or CAS-affiliated institutes, and higher education institutions (HEIs)" (Lu & Dian,1998). As per Lu's interpretation, "all of those agencies must be involved with knowledge innovation and innovation of technology" (Task Force, CAS, 1998). In the report, the NIS comprises of four sub-systems: (a) the knowledge innovation sub-system, (b) the technical innovation sub-system, (c) the knowledge diffusion sub-system, and (d) the knowledge application sub-system (Lu & Dian, 1998). With regard to the knowledge innovation sub-system, Liu believed that the HEIs, and the RUs in particular can play an irreplaceable role, and are necessarily credited as bodies with more obligation and positive roles to contribute to it(ibid.).

In the late 1990s, China's academia witnessed the changes of the NIS as a conceptual system. At that time, a great number of publications were produced. For instance, Sun D.G. (2000) explored how to construct a sub-system of HEIs based on a case study of Northeast University located at Shenyang, Capital of Liaoning province. He thought that the University should comprise three key elements (third level systems), such as research units, teaching workplace and university affiliated companies. Wang. M. (2005) thought that the construction of the university innovation system included educational idea innovation organizational system innovation scientific and technical innovation talent cultivating system innovation spreading and transferring knowledge innovation and so on. Chi (2009) focused on issues of what the RUs research means; of what their innovation teams are, and of how to construct such teams.

NIS as an operational approach in China

Practically, the emergence of the prototype of China's "NIS" as an operational approach might be dated back to as early as 1950s, long before the conceptual framework was introduced into China's academia in the early 1990s. From 1950s to the late 1970s, various kinds of research intensive agencies, including the RUs had been established. Since being influenced by the models in the system of the former Soviet Union, China's model was obviously characterised by its highly planned system controlled by the Central government. In the model, the Central government agencies were a single investor of R&D. This model used to play vital

roles in promoting the S&T development of China. For instance, the first atom bomb, hydrogen bomb, and artificial satellite were made under the governmentally dominated system. However, alongside the rapid transformation of socio-economy of China, the conventional pattern faced lots of challenges.

During the period between 1978 and 1995, China's "NIS" construction stepped into a new stage. In order to catch up with Western industrialised countries in terms of S&T development, Chinese governments at all levels attached much importance to the systematic building related to the S&T development. For instance, in terms of resource allocation a system of competition was introduced, shifting from the previous way of expenditure appropriation to a newly established way of fund application. National Natural Science Foundation of China (NNSFC) was established in 1986. Many Chinese RUs were financially supported by additional public expenditure, e.g. the special appropriation from the Project 211. However, in that period, governments at different levels still played crucial roles in the resource allocation, and retained the dominant status.

From 1995 to 1998, the Chinese society witnessed the shift from the planned economic system to a market one, and also faced the challenges of a globalised knowledge economy. Responding to the shift, the Chinese government replaced the old paradigm of the resource allocation in the planned system with an emerging market oriented mechanism involving S&T. As a result of the replacement, many new national research units, such as National Engineering Research Centers(NERC), Chinese National Engineering Research Centers(CNERC), had been set up to serve the national S&T development. Those units comprised the major forces in enhancing national innovation capacity.

The year of 1998 marked a milestone of China's NIS construction. There were two events worth mentioning. One was an action plan called the *Project Involving Knowledge Innovation* initiated by CAS under the support of state senior leaders (Zhang & He, 1999). The initiated project shifted China's NIS from operational situation into the state of both conceptual and operational frameworks. Another event was the Project 985 announced to start on occasion when Peking University celebrated its 100th anniversary in May 1998. The Project 985was launched as a special policy for building Chinese RUs and to keep abreast of the world class status. Those two events are making far-reaching impacts on unleashing the curtain of China's NIS construction.

Entering into new century, China's NIS construction has been facing both opportunities and challenges. On the one hand, China is the largest emerging economy worldwide, with the global second largest economic scale in total GDP, but if looked from a different angle, it is still deemed as a developing country

with the largest population. More important, China is not an innovation oriented country in which NIS construction still falls far behind many advanced industrialised countries. Many indicators referring to such aspects as the percentage of R&D expenditure shared in total GDP; the ratio of S&T contribution to GDP growth, the extent of dependency on imported technology and so on and so forth have not yet reached the international benchmarks (Xie, 2007; Liu, 2009). Therefore, the Chinese governments have been very much concerned about this situation and attached special importance to the issue. In June 2006 the Chinese State Council released an important document – *the National Medium-and-Long Term Program for S &T Development: 2006-2020* (briefly the Vision 2020 for S&T development), proclaiming that China is scheduled to become a country with a developed NIS in the next decade and half. It stipulates:

> The general objectives for the nation's S&T development will be to: noticeably enhance indigenous innovation capability …; noticeably improve comprehensive strength in basic research and frontier technology development; attain a series of high world impact S&T achievements and join the ranks of innovative countries, thus paving the way for becoming a world S&T power by mid 21stcentury.(State Council, 2006)

The release of the Vision 2020 for S&T Development had one of the most profound implications. First, the emphasis on building NIS is deemed to be the county's future development priority in the next fifteen years. Second, several objectives are put forward, with the following anticipated tasks: (a) 2.5 percent of R&D expenditure budget in the GDP; (b) over 60 percent of contribution rate of S&T in GDP; (c) below 30 percent of technological dependence on foreign countries' support; (d) attempt to take the fifth place in the world ranking in terms of the quantity of indigenous patents and Science Citation Index (SCI)& Engineering Index(EI) papers, and so on and so forth (State Council, 2006).

Major initiatives related to RUs' development

In the past three decades, lots of policies released and initiatives undertaken by the Central Governments have been implemented regard RUs' development. Since space in this paper is limited, we just take a few of them as examples.

Project 211 & 985

The Project 211 and 985 are two important initiatives launched by theMinistry of Education (MOE). The Project 211 was initiated in 1995, with the intention to raise the research standards of high-level HEIs. The name for the project comes from an abbreviation of the 21st century and approximately 100 participating universities. There are four phases of the project from 1994 onward. In the first phase of the project, China earmarked USD0.44 billion in special funds; and in the second phase it allocated 0.97 billion USD for project implementation. In the project's third phase (2007–2011), the MOE set aside USD1.6 billion respectively. By 2011 when the third phrase finished, the total amount of nearly USD4.65 billion have been earmarked to financially support about 107 universities. It is worth emphasizing that the similar amount of provincial special funds have not been counted in the totality. In the forth phrase, the relevant amounts of special funds (unknown) will continue to be invested in the project.

The Project 985 (codenamed after the date of the announcement) is another project being first announced by the former General Secretary of Communist Party Committee of China and then the Chinese President Jiang Zemin at the 100th anniversary of Peking University on May 4, 1998. The aim of the project is to promote China's RUs' development and enhance their reputation and competitiveness. The project involves both the national and local governments allocating large amounts of funding to certain universities in order to build new research centers, improve facilities, hold international conferences, attract world-renowned faculty and visiting scholars, and help Chinese faculty attend conferences abroad. It is reported that about USD 10.98 billion in the phase I and II was invested by the Central government, and an equivalent sum of provincial (and some ministerial) funds was required to be allocated. When first announced in 1998, the project funding was made available to the two best RUs-Peking University and Qsinghua University. Before long, other seven RUs were included in the project. Totally, they were referred to as China's elite group of RUs-called the top C9 League. Apart from Peking Univerity , Qsinghua University, other seven are Zhejiang University, Nanjing University, Fudan University , Shanghai Jiaotong University, University of Science and Technology of China, Xi'an Jiaotong University and Haerbin Institute of Technology. By the end of the second phase of the Project 985, 39 RUs became the recipients of the project funding. It was announced in 2011 that both the project 211 and 985 will not admit new members.

"Thousand Talents" programme and programme 111

The Thousand Talents Program, also called The Recruitment Program of Global Experts, is organized by the Central Organization Department of Communist Party. The program lasting from 2008 to 2018 aims at attracting global top-level foreign talents to work in Chinese research institutes, HEIs, and High Tech companies and other organisations. All these talents should be professors or in equivalent overseas high-level positions in famous foreign universities, research institutes or companies. The program was expected to last for as long as from five to ten years. It is hoped that the recruited talents will lead the innovative industries, improve key technologies and develop the high-tech industries in State Key Labs, National Key Innovative Programs, State Key Disciplines, National Enterprises, State-Owned Commercial and Financial Institutes and High-tech Development Zones. Four years have passed since 2008, and the programme is operating well.

Similarly, the Programme 111, also called the *Programme on Recruiting Global Experts and Talent for Disciplinary Innovation of HEIs,* is jointly organized by the MOE and State Administration of Foreign Experts Affairs(SAFEA). The programme initiated in 2006 aims at enhancing China's RUs' competitiveness and innovation competency. As per the constructive target of the programme, about 1,000 overseas top talents and experts would be selected among the top- ranked 100 RUs worldwide. They were expected to accept the invitation and willing to help China build 100 Centers of Excellence or National Key Laboratories at Chinese RUs, particularly at those involved in the Projects 985 or the Project 211.

Cheung Kong scholars program

This Cheung Kong Scholars Programme, also called the Cheung Kong Achievement Award was initiated and organized in 1998 by Li Ka Shing Foundation collaborating with China's MOE. The program aims at recruiting renowned researchers and academic intellectuals at home and abroad to help build HEIs in China and enhance China's standard of education and intellectual competitiveness. By training the country's best and brightest young minds, the programme strives to compliment the state's objectives of innovation and reforms. During the first phase of the program, the Li Ka Shing Foundation and the MOE joined hands to establish 300 to 500 professorships by special appointment at HEIs within three to five years. Since the program's inception in August 1998, more than 1,400 professors have been appointed

as Cheung Kong Scholars. They were selected, nominated and appointed by the well-known HEIs for professorships, through a very strict procedure of assessment and review conducted by an Expert Committee-comprising internationally renowned scholars – before individual institutions enter into contract with the award candidates.

Those who are selected can receive an annual allowance of USD 16 thousand in addition to the regular benefits package offered by the host institutions in accordance with the state guidelines. In 2005, the award was expanded to include tertiary institutions in Hong Kong and Macau and the research institutions under the Chinese Academy of Sciences in addition to mainland China. In 2007 the programme changed from an integrated rating system to a specialized award system. Candidates from Mainland China, Hong Kong and Macau for the Cheung Kong Achievement Awards are recommended by tertiary institutions directly to the MOE, while mainland research bodies can make recommendations through the Chinese Academy of Science.

Programme for graduates studying abroad

The programme entitled the *Programme of Sending Graduates to Study Abroad in order to Build High-level-China's HEIs* was jointly organized by the MOE and the Ministry of Finance (the MOF) in January, 2007. The programme aims at enhancing the quality of graduate education by annually selecting about 1,000 (total 5000 in five years) enrolled graduate students (50 percent of which are doctoral students) among the 985 Project RUs, and financially support them to study abroad. There are two sorts of fellowships. The first is to financially support some eligible candidates to pursue foreign doctoral degrees for either three or four years. The second is to financially sponsor some students to apply for joint education programmes in which those eligible candidates will be sent to study for 6 mouth or 24 mouths. Those who are engaged in the joint education programmes are expected to take jointly supervision from professors at both home and host universities. Currently the first phase of the programme is almost ending, but a new phase of this programme is being under discussion. It is estimated that the number of fellowship recipients in the new one will increase to as many as 6000 students in next five years.

Multi-roles of RUs as a building block of NIS

In China, there are 39 top leading RUs to be called the project-985-wise institutions. There are mass data indicating that those institutions constitute one of the most important building blocks of NIS, particularly in terms of the knowledge innovation sub-system, and the technical innovation sub-system. As we know, HEIs, and RUs in particular have three traditional, fundamental functions – educating talents by teaching, producing knowledge by research and serving the social development by knowledge-diffusion (Slavo Radosevic, 2007). Therefore, the roles played by China's RUs can be anticipated through analyzing the knowledge -generation function, knowledge-diffusion function, and knowledge-utilization.

Major producers of knowledge innovation

As mentioned above, the knowledge generation based on research is deemed as one of the fundamental functions of RUs, so there is a possibility to shape RUs to be an irreplaceable building block of NIS, particularly in term of shaping the knowledge innovation sub-system. Similar to many RUs at advanced industrialised countries, China's RUs are also making efforts to act in the role of knowledge producers in ways of conducting more research activities, improving the academic milieu surrounding of the RUs' workplaces, contributing more publications, etc.

First, the importance and status of the RUs in this regard are reflected by the proportion of leading research units they have. Commonly those platforms/ bases comprise research-intensive units/centres, or National Key Labs, National Engineering Labs, in which some research projects in natural sciences (both pure/ basic and applied/ technical), social sciences and humanities are conducted under financial support from either the Central or the provincial public expenditure. Up to now, there are 372 disciplinary platforms/ bases covering various fields of studies have been established in the 985 project-wise institutions. Table (1) shows the total numbers of the platforms/bases and their distribution in various fields of studies.

Table 1. distribution of disciplinary Platforms/Bases for NIS

Name	Fields of studies	No.	Name	Fields of studies	No.
Platforms for S&T at the 985 project-wise Institutions	Basic frontier science	39	Bases for Philosophy &Social Sciences at the 985 project-wise Institutions	Philosophy, Marxism	18
	Life sciences	55		Politics, Administration, Law,	11
	Information Sciences	35		Literature, Linguistics, History	22
	Material, Manufacturing	40		Economic, Sociology, Business Management	30
	Energy, Environment, Public Security	54		International Affairs of Taiwan & Macau	10
	National Security	35		Management	11
				Education, Psychology, Journalism	12
	Sub-total	258		Sub-total	114
Total	372				

Source: MOE

The establishment of the platforms/ bases aims at promoting the disciplinary development of the RUs, and enhancing their indigenous innovation ability. Some platforms at the RUs become the most important contributors of the original findings in basic sciences. For instance, there are 102 National Key Labs at RUs, taking up 46 percent of the total number of National Key Labs in both Chinese Academia of Science and HEIs, and 78 percent of the relevant totality at HEIs (Task force for the 985 project institution-wise, 2011, p.65,). The platforms/bases lead to an emergence of several innovation teams with international benchmarks. By 2008, 124 such innovation teams at RUs were constituted, taking up 92 percent of the corresponding totality at HEIs, or one second of the totality nationwide (ibid., p.47) Clearly, those establishments of national level platforms/bases at the RUs are among the important initiatives used to enhance China's indigenous innovation competency in terms of knowledge production and technical innovation.

Second, research capacity of academics is another indicator of RUs' competitiveness. There are two indicators representing how important and necessary the RUs are. One is the proportion of research programs. For instance, about 78.1 percent of research programmes (57.1 percent of key items among them) sponsored by the National Science Foundation of China (NSFC) were conducted by RUs' professors/ scientists in 2003. Another outcome is the number of publication contributed by academics at RUs to international journals, e.g., the number of publications in the SCI-cited international journals had doubled in the decade from 1997 to 2006 (Zhang. J, 2008). Additionally, about one half of the total outcomes of that sort

in Mainland China were contributed by academics at 39 RUs (mainly referred to as the 985 project-wise institutions) — and particularly by academics at the C9 League whose publications took up to 25 percent of the corresponding totality in Mainland China. About 30 percent of the academic articles contributed by the C9 League-based academics have brought about quite good academic impacts. Their Index Factor (IF) is in the top 25 percent on a global scale (Zhang, 2008).

Major contributor of technical innovation

RUs are the major sources of technical invention, playing an increasingly important role as a building block of the technical innovation sub-system in NIS. Currently, the technical innovation sub-system has been shaped to mainly undertake its duties on conducting some research related to technical or applied science, such as new energy, automobile, and aviation and so forth. TIS comprises several technical invention centres or R&D ancies either named National Engineering or Technical Center (NETC), and National Engineering Lab (NEL). By 2007, 16 out of 26 NELs were established at RUs, taking up 62 percent of the totality at HEIs across the country (Task force for the 985 project, p. 69).The outcome of technical invention and innovation might be reflected in the amounts of patents. As shown in Figure 1 , the amount of patents belonging to RUs in 2008 increased ten times more than that of 1999. Additionally, it merits a notice, in the past ten years from 1999 to 2008, four out of total five National Best Awards for S &T Progress had been won by the 985 project-wise institutions (ibid., p. 36).

Table 2. No. of Faculty with Academic Degree by level of Graduate Education (2001–06)

Year	Total	Doctor		Master	
			(%)		(%)
01	531910	34853	6.5	121546	22.9
02	618419	43442	7.0	149392	24.2
03	724658	53612	8.0	182517	25.2
04	858393	70487	8.2	223860	26.1
05	965839	88450	9.2	269003	27.9
06	1075989	108605	10.0	317823	29.5

Source: CYBEB, 2007.N=Number

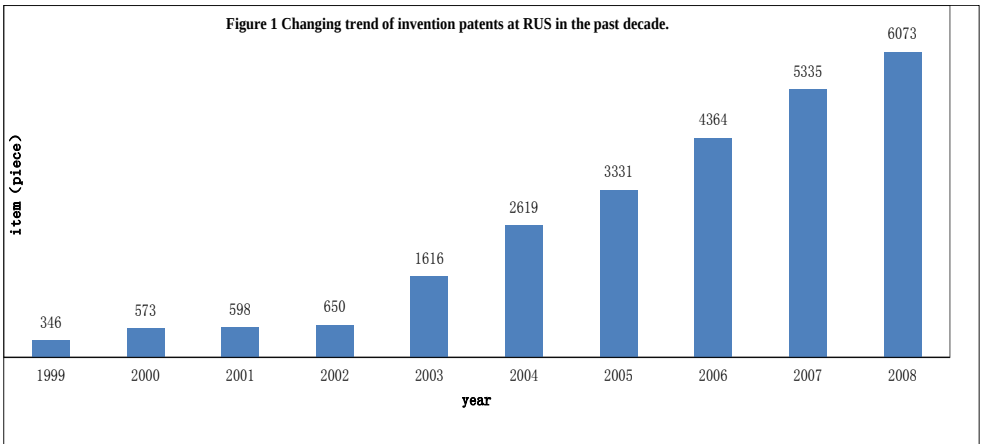


Figure 1. Changing trend of invention patents at RUs in the past decade.

Major suppliers of academics and talents

Research education, namely referred to as graduate education, is a fundamental section of RUs. The purpose of the research education is to prepare qualified promising academics through teaching and training. In this sense, RUs naturally become the 'cradles' of outstanding scientists. By 2006, there were 108,605 faculty and staff holding doctorates in different fields of studies, making up 10 percent of the total faculty. As per the MOE statistics, the enrolment of doctoral students increased to 222,500 in 2007. Meanwhile, the amount of doctorate recipients reached 41,400 in the same year (MOE, 2008).

Table 3. No. of PhD holders in charge of National R & D Projects (2001–06)

Year	Total	Doctor	Master	Bachelor	Other	Doctor (%)
01	4435	2929	724	366	416	66.0
02	5808	4041	950	461	356	69.6
03	6359	4535	1130	440	254	71.3
04	7711	5872	1132	480	227	76.2
05	9111	7307	1173	422	209	80.2
06	10271	8493	1189	407	182	82.7
Total	84328	64537	12098	4881	2812	76.5 (average)

Source: the workout based on data from http://www.nsfc.gov.cn/nsfc/cen/10yy/index.htm

Due to the fact that more and more PhD recipients preferred to take posts of teaching and research at the RUs, the qualification of faculty gradually improved.

This situation is helpful to enhance the competitiveness of China's RUs that are facing the challenges globally and locally. Actually, the increase in the number of doctorate holders among faculty and staff really enhances research capacity of the RUs. For instance, as shown in table (3), more and more academics holding doctorates have taken responsibilities to some projects sponsored by the National Nature Science Foundation(the NNSF) during the time from 2001 to 2006.

Major drivers of knowledge diffusion

Since 1980s, China's RUs attached great importance to knowledge diffusion and technology transfer via different modes, such as (a) setting up linkages with enterprises; (b) establishing university affiliated companies; and (c) collaborating with local governments to establish the Science Parks. By 2003, China had set up 43 university-based Science Parks across the country. Additionally, by May 2003, there were about 40 listed companies at the financial market mostly affiliated to the 985 project-wise institutions, about 30 of them belonged to the C9 League. For instance, in Zhongguanchun Sceince Park – one of the most renown science parks located in Haidian district inBeijing, set the best example in this regard. Zhongguanuang-chun Science Park is famous for its knowledge based economy because more than 50 RUs and 213 research institutes are located in the areas. It is reported to involve 41 National Engeering Cenres, 42 Chinese national engeering centres, one third of the total number of the national key centres & the national key labs, half of all academician, one fifth of the annual R&D expenditure, one forth of the national R&D for High-Tech pojects(named as Project 863) and one third of the national key projects for pure science studies (named as Project 973) are concentrated in these areas (Scientific Times, 2006). In 2009, there were about 17,060 High-Tech intensive firms and companies. Some of them were the RUs' affiliations, such as the following important companies in this district: Peking University Founder Group, Beida Jade Bird Group Sinobioway, Peking University Resource Group, Qsinghua niversity Ziguang Co.Ltd , Qsinghua niversity Tong Fang Co. Ltd.

Challenges and response

Realistic dilemma

Chinese RUs have shown to be no strangers to change in order to meet the need of being a building block of NIS. However, in reality, they are facing many challenges in this regard.

First, the traditional ideas of universities as negative elements constitute impeding forces. Before 1990s,when the Chinese society was operating in the context of command economy, HIEs were defined as organizations with the affiliated public departments of governments entitled the *Public Units pinyin:shi ye dan wei*. It meant they were highly controlled by the central government, and short of institutional autonomy. The universities were characterized as: (a) a single system of ownership; (b) with vague responsibilities and obligations between institutions and governments; (c) with resources distributed by command and planning; (d) the strong administrative power; (e) with faculty defined as an identity of civic servant; (f) public sector expenditure model , etc. (Zhao Li-bo, pp. 43–56). In that case, Chinese universities would rather resemble the governmental agencies than the academic communities. The situation has changed since 1990s', alongside the social transition from command economy to the market one, particularly, after the year 1998, when the first Law in Higher Education was enacted. The Law stipulates that universities could be empowered with more institutional autonomy. The mechanisms of competition should be introduced into the university system. Ten years have passed since the Law took effect, but the traditional ideas embedded in traditional culture are not completely changed.

Second, the governance model of a modern university has not really been established in HEIs, including the RUs. In other words, the administrative powers still dominate the academic powers which runs against the inner logic of university governance (Shi & WU, 2012). In the university governance system, it can be noticed that a hierarchical control with the bureaucratic system give more power to the presidents and administrators in deciding on the university affairs. Therefore most academics just look like teaching or researching machines rather than the owners of HEIs. The faculty/ academics' initiative and creativity are harmed and killed. To a certain degree, the university governance and affairs management highly rely on a limited number of university and division Chiefs, rather than on the academic collective wisdom. The reasons explaining this are partly because China is a country with a traditional culture of official orientation. For a long term, China's universities influenced by that kind of cultural tradition had a limited recognition of institutional

autonomy and academic freedom. As a result, the bureaucratic and arbitrary decisions became popular modes of organizational management and operation. In the operational framework of China's universities, the top-down mode of decision-making is more common, which follows a track like this: the president orders vice presidents; the vice presidents order directors or heads of some administrative offices; then the directors and heads of offices order some deans of professional schools. Currently, however, in order to change the situation, some academic committees have been set up at most HEIs, but most of them cannot play a great role partly because many members in the committees are not elected from the academic system. Some of them take positions in administrative system although they have academic titles. In the bureaucratic culture oriented universities, many academics prefer to obtain positions in the administrative system in order to control more resource and power. This misleads and blemishes the academic communities because academics pay much more attention to administrative positions than their academic contribution. As said by Dr. Wang, a university professor: "I wish I could get an opportunity to be an executive chief at a given division at central administration at my university for I can benefit more than if I just keep on teaching and research as an academic". What Dr. Wang said represented lots of academics, in particular young scholars' oppinions. In his views, a leader's position means that he can get more resources and benefits. Consequently, the academic work will be devalued and the milieu surrounding the academic affairs such as teaching and research might be hurt.

Third, the indigenous innovation capacity of RUs is not competitive enough. On the one hand, with regard to quantity, China has about 40 RUs, just taking up less than 2 percent of HEIs in total. It falls far behind that of the Western developed countries, such as the USA that has about 200 RUs, taking up about 6 percent of the total HEIs of USA. On the other hand, the terms of quality, China's RUs also need improving. Here we can list several indicators as follows: (a) the original outcome produced at RUs is limited, e.g. China's RUs contributed just 17 academic papers to the international top journals,such as Science or Nature. That was too little compared to the relevant contribution by Harvard University that could produce about 100 papers for two journals annually (Mo H.S. & Han. L., 2004; Wang M., 2005). The weakness of knowledge innovation might also be reflected in the number of the Nobel laureates, partly because it represents the highest benchmark. As per statistics, during the period between 1901 and 1982, there had been 97 laureates of the Nobel Prize in Physics at RUs worldwide, making up 81.5 percent of the totality. However, up to now, nobody in Chinese academia has won the Nobel Prize (Wang, 2005).

Forth, the capacity of technical innovation of the RUs needs enhancing. As per one investigation, annually about 7,000 items of outcome in terms of S&T are produced but only about 20–30 percent of them can generate economic benefits. However, on average 60 percent of transferring ratio is found in the Western developed countries, such as Japan (80 %), the UK, France, and Germany (more than 50 %). As said by the former Nobel Physics Laureate Prof. Yang Zhengning, who is working at QHU. *"China has mastered lots of the most advanced and complicated High-Tech matters in the world, e.g. the technology of launching Satellites and Rockets, but it has not known how to make them generate socio-economic benefits, that is credited as the bigget failure of universities."(Wang, 2005)* This constitutes obstacles in promoting the RUs to be a building block of NIS of the country.

Fifth, the quality of research education is under question alongside the rapid expansion of enrolment of HEIs, including RUs. Several studies have recently come to the conclusion that the quality of the doctorate education is deteriorating (Qiao, 2007, Zhou, 2007). In 2005, one of the research teams from the institute of higher education, SJTU released its research findings based on 72 national key universities affiliated to the MOE. The team found that the quality of research education at HEIs declined due to the rapid increase of enrollment (Wang, 2005). Another survey conducted by the research group of Peking University in 2004 indicated that about 47.8 percent of doctoral advisors considered the quality of the doctorate education to be "unsatisfactory" (Min, 2006). In 2007, the Office of Academic Degree organized the Task Force to conduct a nationwide investigation. Its primary conclusion from the investigation has proved that the qualitative problem has posed the greatest challenge to Chinese doctorate education.

Possible option

In 2005, Tsien Hsue Shen – the father of China's space technology expressed his worries when he was dying to Wen Jiabao – the Chinese premier who came to comfort him at the hospital. "Why cannot Chinese HEIs produce world-class researchers?" questioned Tsien. The phrase is called as "the Tsien's Question", which is leading to a tide of reflections on Chinese HEIs. In responding to the Tsien's Question, the MOE is determined to speed up the reforms of higher education system, particularly of the university governance model in order to create a good environment for education. In 2009, the MOE issued the "2020 Outline", providing that HEIs are required to establish a new type of the management mechanism and modernize the

university system by reforming and improving their organizational governance. In order to respond to the call of the MOE, many people begin to consider how to conduct the reform.

First of all, it is necessary to enhance the conceptual recognition of the NIS, with intending to know that the innovation is not the same as invention. As Trawling English dictionaries highlighted, the term of innovation is commonly described as creating value by doing things differently or creating value through doing something in a novel way. In this case, innovation refers to change, inventing something new and different.

Second, it is necessary to promote the innovation culture by strengthening the academic power at RUs and by shaping them to be real academic communities, partly because the real academic community should be the centre of learning, knowledge generation, and diffusion. Therefore RUs as the academic communities should be workplaces where various new ideas and inventions are encouraged. RUs need to become the places where different doctrines and disciplines coexist promoting the culture of forbearing and embracing each other's point of view. People with different academic backgrounds have different perspectives on different issues and affairs, so they should learn how to respect each other. The cross-fertilization of ideas is the precondition of knowledge generation and creative activities but it is based on the cooperation and dialogue of culture which enhances mutual understanding and appreciation. In a sense, the lack of mutual understanding and appreciation leads to the fact that people with different academic background might not know how to cooperate and conduct dialogue each other.

Third, building a better national-level cross-disciplinary platform should be listed as a priority of universities' future development. It merits attention that four out of six most important National Labs (multi-disciplinary platforms) are arranged to be set up at RUs campuses recently. They are named HFNL (Hefei National Lab at University of Science and Technology of China); Tsinghua National Lab for Information Science and Technology at Qsinghua University; **BNLMS (Beijing National Lab for Molecular Sciences) at Peking University;** and WNLO (Wuhan National Lab for Optoelectronics) at Hhuazhong University of Science and Technology (Task Force for the Project 985 institution, p.65).

Forth, it is also necessary to further strengthen the linkage of government-enterprise-university relations. According to the model of the Triple Helix of Innovation created by Loet Leydesdorff and Henry Etzkowitz, et al., universities, industries and governments are three components which are arranged to generate and serve the knowledge based innovative society via their interaction with each other in a framework (Xu & Wang, 2007). The network of university-industry-government

relations may continuously restructure the opportunity matrix of a complex system which itself is the result of the reconstruction from different angles by each of the participating entities. In the new type of academic-industry-government relation, universities are never viewed as affiliations of governments, they can independently play their innovative roles in promoting the society via interacting with governments and industries. Particularly in the linkage of university-industry collaboration, the old paradigm of "industry-based" or demand side should be replaced by the emerging pattern of University-based (Chun J. L. et al., 2010).

Conclusions

It is clear that China's RUs are at the crossroads, torn between old and new forces, along with their operation shifting from an old paradigm to an emerging one, which starts to be oriented towards an environment influenced by NIS. As a result, RUs in Chinese context are not any more what they used to be. The reform of the institutional organizations in China in order to meet the needs of building the innovation-oriented country has many complex and multidimensional implications for the changes of the higher education system. The reforms indicate the end of traditional ideas and patterns of institutional cultures and the beginning of new ones. Chinese RUs as a building block of NIS today should be agencies with culture of innovation and creation "that is considered as the cluster of different spiritual, material, intellectual and affective traits that characterize a society or social groups" (Alfonso B. Cabal, 1993, p.128). However, as discussed above, the Chinese RUs are not fully ready to fulfil such roles because of the shortcomings they have, e.g. outdated ideologies, teaching methods and contents as well as the backward management. Interestingly, Chinese RUs start to realize the negative effects of their backwardness they have started making efforts to resolve these problems. It may be believed that those difficulties will be overcome and China will become a country with a developed NIS once the Chinese RUs complete their reforms to become the building blocks of NIS.

References

Alfonso Borrero Cabal (1993) *The Universities as An Institution Today,* UNESCO Publishing, Paris.

Bennoit Godin (2007) National Innovation System: The systematic Approach in historical perspective. Project on the History and Sociology of STI Statistics Working Paper No. 36.

Bruckner, Eberhard, Werner Ebeling, Miguel A. Jiménez Montaño, and Andrea Scharnhorst (1994). "Hyperselection and Innovation Described by a Stochastic Model of Technological Evolution," pages 79-90 in: Leydesdorff & Van den Beselaar (1994).

Chun J. L. & Chun Y. Z. & Liu, A.Y(2010) Patent strategy in Chinese universities: a comparative Perspective, Scientometrics (2010) 84:53–63 DOI 10.1007/s11192-010-0194-8

Chen Li ed. (2002). Report involving Chinese National Strategic Issues. CASS Press.

Chi. Y.(2009)Construction of University research and Innovation Team, Doctoral Dissertation of Ji Lin University.

Economic News(2006). "Zhongguancun: Synonyms For Science and Technology". Newspaper. Apr.13) http://www.economicdaily.com.cn/no3/newsmore/200604/13/t20060413_117138.shtml.

Free encyclopedia. National Innovation System, http://en. wikipedia. org/wiki/ National Innovation System.

Liu Baocun ed. (2009) Construction of Innovative Nation and reform of Chinese Higher Education, Higher Education Press.

Kinji Gonda Fujio Sakau chi & Tom Higgins. ed., (1994) Regionalization of Science and Technology Resource in the Context of Globalization, Industrial Research Center of Japan, Tokyo, Japan.

M H.S. & Han L. (2004) t*he amounts of publication on Nature & Science contributed by China's research agency in 2003* China's Basic Science Vol.(3).

Min W.F.(2006) *Report of development of Chinese Education and Human Capital Resource* Peking University Press.

Qiao S.L. (2007), *Picture of Quality of Graduate Education*, edited by *Tang JI & Chen Xuefei edited (2007), Quality of Graduate Education: Connotation and Approach*, Shanghai Jiao Tong University Press, Press.

Scientific Times (2006) the way to from Made in to Created- in- China: Zhongguancun as core area leading China innovation.

Hölttä S. (2007) Changing Social Role of Universities in Global Knowledge -based Society, ed. in "Social Change and University Development", Collection of Papers and abstracts, Beijing Forum, pp.212–232.

Radose S. (2007) *The role of higher education in national innovation system in Central ans Eastern Europe* adopted in David Bridges, Pa;mira etc (2007) ed. *Higher education and national development: universities and societies in transition*, pp136–144.

State Council (2006), the National Medium-and-Long Term Program for S &T Development: 2006–2020.

State Council (2010) *National Medium and Long- term Program for Educational Development and Reform (2012–2020),*http://www.gov.cn/jrzg/2010-07/29/content_1667143.htm

Sun D.G(2000) Establishing Innovation System of Northeast University to Meet challenges of Knowledge Economy *Journal of Northeastern University(Social Science) Vol.(2).*

Tang S. (1993) *China's National Innovation System: Change and Prospect,* Chinese Soft Sciences, Vol (1).

Task force for 985 project wise institutions building (2011) *"Report on 985 project wise institution building"* Higher Education Press .

Task Force, CAS,(1998) :Establishing a National Innovation System to Meet the Era of Knowledge-based Economy, *World R &D of Science and Technology, Vol.(3).*

Wang M.(2005)Research on Construction of University Innovation in China. Master Thesis of Hunan Normal University.

Xie A.B. (2007) Mission of HEI in building the Innovative Nation, Higher education research and Evaluation, No.3.

Xu H. & Wang Z.Q (2007) The Triple Helix of University, Industry and Government Partnerships the Concept, Levels and University Transformation, Journal of Southwest University. Vol.33 No.3.

Xu X.Z & Mei W.Z(2006). Evaluation on Innovational capacity of Global Universities at Innovational Age, Higher Engineering Education Research (4): 26–27.

Lu Y.X. & Yi D. (1998): Innovation: Facing challenge of Globally Knowledge Economy. An Interview with President of CAS Yongxia LU; 21 century (6) .

Zhang F. & He C.Q (1999) NIS: Engine of the Second Modernization, Higher Education Press.

Zhang J. (2008) Research Universities: as supporter of Innovative Nation, Guangming Daily, 2008-11-12.

Shi X.G. & WU Z.J (2012) University Governance Council in China, working report for 2th Project of Higher Education, MOE of Vietnam.

Scientific Times (2006) the Road to go from the "Goods Made in China" to that created by China": Zhongguancun as core area leading China innovation. http://blog. china. alibaba.com /blog/cczlzx /article/ b0-i599901.html.

Zhao L. B. (2003) *Shi Ye Unit Reform,* Shang Dong People's Publishing House. p.43–56.

Chapter 10

Regional higher education system development in China's national innovation system

Xiuyan Wang

In China's current higher education system, regional higher education institutions have become the major base for China's talent development due to the big share of enrollment, headcount and quantity. Therefore, the development of national innovation system depends on the level of development and status of regional higher education system. While developing the national innovation system with Chinese characteristics, regional higher education institutions are the major regional suppliers of innovators, therefore, classification and management should be the key elements in regional higher education system. The most effective way of developing regional higher education system is holding onto the core mission of producing applied innovators through the cooperation and interaction between the regional higher education institutions and the central ones, the regional higher education institutions and the government, the regional higher education institutions and the market.

Position of regional higher education institutions in national scientific research system

Basic elements and framework of national innovation system

The national innovation system is about integrating scientific technologies into the economic growth, with the core being the interaction between the producer, the transmitter, the user of scientific technologies and government agencies. Thus, on this basis the optimal mechanism in which scientific technologies circulate and are applied throughout the society is shaped. The national innovation system mainly consists of two types of elements: the subject and the environment. The subject represents the institutions that instill innovation, or the behavior subject of national innovation system, including enterprises, higher education institutions, scientific research institutions, government, and intermediary agents. Among them, enterprises are the subjects of new knowledge application, technical innovation and market expansion. Higher education institutions and scientific research institutions are important suppliers of innovative knowledge and the sources of technical innovation fundamentals. They form the subject of knowledge innovation and transmission. The government, as the major representative and executor of state duties and powers, promotes innovative goal setting, resource allocation, policy making and environment development. The environment includes system, operation mechanism, management and security conditions. The environment element is the modulation and restriction factor of successfully carrying out and getting results from National innovation system. It involves the reform of science and technology system and the economy system, also referring to the adjustment and standardization of the function of the government. The element of the environment is the difficulty of constructing and reforming National innovation system.

Regional higher education institutions: foundation of national innovation system

China has a large number of higher education institutions of different types and levels, forming the subject of national innovation system. But their roles and responsibilities vary.

According to related statistical analysis of scientific research input and output in 2004 and 2006 released by the Ministry of Education (Figure 1 and 2), the percen-

tage of scientific research subjects available in regional higher education institutions reached 51.96% (2004) and 54.77% (2006) of the total number of scientific research subjects available in higher education institutions; the scientific research members accounted for 58.40% (2004) and 59.49% (2006) of the national total; and the fund expenditure accounted for 31.8% (2004) and 33.81% of the total amount. It can be seen that the input of regional higher education institutions account for more than 1/3 of the national total.

According to the output analysis, the proportion of scientific and technological publications was 67.55% (2004) and 70.51% (2006); the share of academic theses 57.55% (2004) and 55.43% (2006); awarded findings constituted 55.63% (2004) and 57.68% (2006); technical transfer contracts made up 38.14% (2004) and 45.91% (2006); and the share of the sold patents was 46.65% and 5307 respectively. It can be seen that the research output of regional higher education institutions accounts for around 1/2 of the national total, despite much lower unit output rate than in the other two types of higher education institutions. There's no doubt that regional higher education institutions are the foundation of national innovation system.

Roles and characteristics of regional higher education institutions

Higher education system is not built on the basis of the minority of first-class universities. Its level and quality are determined by the developing level and status of the majority of regional higher education institutions.

Regional higher education institutions: subject of talent supply to regional innovative system

In the course of leap-forward development of China's higher education, the regional higher education institutions are becoming more influential and playing a similar role in talent development to what they are in the country's scientific research system. In terms of quantity, the regional higher education institutions make up the majority in China's higher education institutions; in terms of enrollment, the regional higher education institutions are the major force in transforming elite education to mass education. China has 1908 higher education institutions, of which 1502 are regional universities/colleges, accounting for 78.7% of the national total. There are 740

Year	Content	Scientific and technological subjects			Scientific and technological publication	Academic thesis	Finding awards		Technical transfer		Number of authorized IPR	Sold patents	
		Number of subjects	Number of involved persons	Actual expen-diture (unit: thousand RMB)			Total	National awards	Contract total	Income (unit: thousand RMB)		Item	Value (unit: thousand RMB)
	Total:	**191744**	**189991**	**19397679**	**8619**	**428229**	**4102**	**190**	**9188**	**1355338**	**6399**	**731**	**277585**
2004	Ministry-affiliated universities/ colleges	14350	11049	2472537	356	24780	282	17	1272	188224	288	36	8312
	Universities/ colleges directly affiliated to Ministry of Education	77773	67979	10752767	2441	157021	1538	119	4411	719110	4048	354	151021
	Regional universities /colleges	99621	110964	6172375	5822	246428	2282	54	3505	448004	2063	341	118252

Figure 1. Research subjects and findings of China's higher education institutions in 2004

Year	Content	Scientific and technological subjects					Finding awards		Technical transfer			Sold patents	
		Number of subjects	Number of involved persons	Actual expenditure (unit: thousand RMB)	Scientific and technological publication	Academic thesis	Total	National awards	Contract total	Income (unit: thousand RMB)	Number of authorized IPR	Item	Value (unit: thousand RMB)
	Total:	**241710**	**209429**	**27268784**	**9902**	**548909**	**4452**	**156**	**6878**	**1256226**	**12043**	**701**	**286832**
2006	Ministry-affiliated universities/ colleges	15016	11957	3637576	445	32938	272	22	616	95580	713	21	18976
	Universities/ colleges directly affiliated to Ministry of Education	94319	72877	14410275	2475	211737	1612	101	3105	649937	7030	308	184913
	Regional universities /colleges	132375	124597	9220933	6982	304234	2568	33	3157	510709	4300	372	82943

Figure 2. Research subjects and findings of China's higher education institutions in 2006

undergraduate schools in China, of which 604 are regional undergraduate schools, accounting for 81.6% of the total. Regional undergraduate universities/colleges and higher vocational colleges have 17,168,000 students, accounting for 91.1% of the national total. The enrollments in regional undergraduate universities/colleges and higher vocational colleges amount to 5,228,000, accounting for 92.4% of the national total (5,659,000). In China's current higher education system, regional higher education institutions have become the major base for China's talent development and talent source for regional innovation system due to the big share of enrollment, headcount and quantity. (China Education and Research Network,2008)

Classification and management – features of China's regional higher education institutions

According to the positioning and goals of individual institutions, regional higher education institutions can be classified into three types, i.e. regional key universities, ordinary undergraduate universities/colleges, and higher vocational colleges. Different types of regional higher education institutions have different functions and missions. Since there are so many of them, higher education institutions have to avoid homogenization and realize healthy competition and common development, thus fully bringing out their influence and vitality in national higher education system. The present homogenization of China's regional higher education institutions has led to a substantial waste of education resources and severe imbalance of the developing structure of applied innovators. The regional higher education institutions should have diverse talent developing modes that distinguish one from another (Guo,2011).

Exploring the way of developing customized guidance and management approaches to higher education institutions is one of the key priorities of the pilot reform of education system. Different higher education institutions should adopt suitable and systematic classification and management approaches to arrange resource allocation and teaching modes. The classification system will greatly promote policy guiding and resource allocation, further assisting scientific positioning of higher education institutions to practice their strengths, tackle the problem of groundless following and homogenization, and shape their unique profiles (Guo,2011).

In the process of establishing a well-positioned, flexible and orderly regional higher education system, regional key universities should act as "role models" to promote regional economic and social development, solve realistic issues in regional economic and social development, enhance their strengths and improve education

quality on the basis of developing the capacity of applied innovators to use the advantages of centralized resources (Guo,2011).

Developing strategy of China's regional higher education system

Holding onto the core mission of developing applied innovators

The National Education Plan advocates developing hundreds of millions of high-quality laborers and tens of millions of professionals and a multitude of outstanding innovators. Talents at different levels are all innovators, including the greatest minds, scientists, theorists, inventive researchers and academicians, and also a multitude of applied talents with innovative ideas, nonconventional ways of thinking and developing new technologies, not to mention the new-generation technicians who can apply new technologies and innovative approaches to solve specific problems.

The mission and responsibility of regional higher education institutions is promoting regional economic and social development by engaging themselves in solving the realistic issues in regional economic and social development. Developing talents to contribute to regional economic and social development is the motivation of regional higher education institutions (Guo,2011).

Applied innovators are applied talents equipped with innovative spirit and creativity. Innovators can be classified into academic innovators, applied innovators and technical innovators. All of them require innovative spirit and creativity. Different professions and positions need different types of innovators according to their subject priorities. Applied innovators may not be productive academicians or research elites, but must be pragmatic doers who have received mass education and meet the actual demands of employers, so that they can work in production line and solve real-life problems by applying their knowledge and in return enhance their practical skills (Guo,2011).

Changes in education principles and ideas drive the development of applied innovators. The regional higher education system should set clear goals, keep a balanced knowledge-competence-quality structure, and erect the fundamental principle of putting students first (Guo,2011).

Deepening the education reform, especially its talent development mode, is the fundamental way of developing applied innovators. The regional higher education institutions should proactively explore the growth and development patterns

of applied innovators, deepen the course contents and teaching methods reform, and focus on cultivating students' creative thinking, innovative spirit and practical skills. Teachers should shift the priority from "teaching" to "learning", and adjust their teaching plans accordingly, giving focus to the study and reform of teaching methods. The course structure and contents are crucial to the teaching system, hence, they must be systematic and foreseeable. At the same time students should be encouraged to shift the learning priority from "textbook knowledge" to "practical skills" based on the cultivation and development of lifelong learning ability by maintaining scientific and applicable learning methods (Guo,2011).

Developing applied innovators also requires further enhancement of students' practical skills in issue analysis, problem solving and practical operation. Applied innovators in the field of engineering should equip themselves with the ability to see the big picture and good engineering sense (Guo,2011).

Cooperation: important way of developing regional higher education system

The actors of regional innovation system can be classified into five groups: 1. corporate R&D departments; 2. scientific research institutes; 3. education and training institutions; 4. government agencies; 5. innovative service agencies. Among these actors, higher education institutions provide significant guidance and support to regional innovation system as the "core resource". To fully promote the regional development and realize a coordinated development of regional higher education institutions and the innovation system, regional higher education institutions must strengthen the interaction and cooperation with each other by forming a close cooperative innovation alliance for resource sharing and advantage complementation.

Taking Beijing Municipality-affiliated higher education institutions and Beijing University of Technology as example, the "cooperation" in regional higher education system consists of three aspects:

The first one is cooperation between municipally-affiliated and centrally-affiliated higher education institutions. In 2004, the "Joint Development Program Plan of Beijing Municipal Commission of Education" was released to encourage the alliance between centrally-affiliated and municipally-affiliated higher education institutions and to promote the improvement of scientific research strength of municipality-based higher education institutions, so that they can better serve the development of Beijing. Most projects in the joint program aim to study the major acute problems in Beijing's economic and social development, especially that of the "green Olym-

pics". Finding transfer projects account for more than 20% of the total fund. At the end of 2005, Beijing took the lead to set up ten discipline groups, which have effectively integrated Beijing's higher education resources, improved higher education institutions' function to better serve the society, realized advantage complementation and common development of ministry-affiliated and municipality-affiliated higher education institutions, and enhanced the latter's ability of implementing significant scientific research projects.

The second aspect involves cooperation between regional higher education institutions and the government. In 2010, Beijing University of Technology signed a cooperative agreement with Beijing Municipal Commission of Science and Technology on establishing R&D experiment service base at the university, becoming the only municipality-affiliated higher education institution that the Commission has established R&D experiment service base with since 2007. The base was set up with the goal of "cultivating scientific and technological resources, promoting openness and sharing, serving corporate demands, and supporting social development", and aimed at providing public access to 650 million-worth equipment, 20 national and provincial labs, top intelligent resources and abundant scientific and technological findings step by step, so as to improve the higher education institutions' ability and accomplishment in scientific and technological innovation and contribution to the development Beijing. At the same time, the university has joined the new industrial technology alliance to practice its strength in fundamental scientific research and breakthrough in meeting high-end demands such as standard formulation and technical breakthrough. The alliance gathered advantageous forces of all members that share the risks and benefits to realize joint innovation and solve the core, similar and critical problems in industrial development. Thus, the entire industrial chain has improved the innovative development, becoming the major driving force in marketing, technical industrialization and commercialization, and laying significant foundation for industrial cluster development. As one of the core members of Beijing's industrial technology alliances, the university is playing an important role in knowledge and technological innovation in such industries as advanced manufacturing, new materials, and environment protection.

The third aspect involves the integration of regional higher education institutions into the market. The university carried out a management reform, which has promoted the industrialization of many profitable and highly technological industry projects, thus quickening the process of transforming the university's research findings into concrete products. For instance, the university owned independent IPR and 18 national patents related to the "industrialization of highly efficient and super-lightness light-emitting diode". After assets evaluation, the patents were successfully

transferred to TimesLED at the value of six million USD. The research team of the university also supported the project's investment attraction and industrialization. The project has attracted a great concern from Beijing Municipal Government and become one of the university's most significant achievements in research findings industrialization as well as the industry-education-research integration.

In 2008, the university cooperated with Beijing General Research Institute of Mining & Metallurgy and Beijing Tungsten & Molybdenum Material Factory in developing multi-component composite rare-earth-tungsten electrode material, which was awarded the Second-Class Prize of National Class Technological Invention. The invention provided solution to a technical difficulty in material industry of Beijing. This is an evidence of the university's research strength and originality in preparation of the foundation of material industry, and also research finding's industrialization, which saved Beijing Tungsten & Molybdenum Material Factory from bankruptcy, made it an internationally competitive company with ten million USD output value, and brought notable social return and economic benefits through industrial manufacturing and global market sales. This further shows the significance of long-term steady scientific and technological research in the development of regional innovation system.

Compared with the national higher education system, the regional higher education system is still at the starting point due to the impacts from its history and the national education management system. The position, role, structure and features of regional higher education system in regional innovation system are not yet clearly identified, hence, the development of regional higher education system is an important subject both in theoretical research and practical exploration for the development of a leading higher education system of China.

References

Guo, G.S., 2011 (1), Integrating into Capital Innovation System to Achieve Harmonious and Interactive Development of Regional Higher Education Institutions and Regional Economy and Society, Beijing Education (Higher Education).

Guo, G.S., 2011 (4), Industry-education-research Integration: Promoting Interactive Development of Higher Education Institutions and Regions, Chinese University Technology Transfer.

Chapter 11

Regional high-level universities and regional Innovation system construction

Baohua Jin & Ji Cao

Currently, with the approaching of knowledge economy, independent innovation capability has increasingly become a decisive force for the state to realize sustainable development and strengthen international competiveness. Reinforcing state innovation system construction, improving independent innovation capability and constructing innovation-oriented state have become the key strategies for many countries. At the beginning of 2006, the Chinese government released the *Outline of the National Program for Long- and Medium-Term Scientific and Technological Development*, which clearly stipulated the strategic objective to establish an innovation-oriented state. The establishment of national innovation system has been officially launched. Regional innovation system is the foundation for state innovation system. To establish an innovation-oriented state, we must strengthen regional innovation system, which is an important guarantee to improve regional innovation capability and enhance the national innovation system. The *National Program for Long- and Medium-Term Scientific and Technological Development* (2006) further pointed out that when "establishing regional innovation systems with distinctive regional features and advantages.....the following institutions will play an important role: higher education institutions, research institutes and state high-tech developmental zones "responsible for knowledge accumulation, production and dissemination".

Nowadays, the relationship between universities and regional innovation system has aroused a nation-wide concern of the academic field, leading to the improvement in structuring of innovation country and regional innovation system. Many scholars have discussions and then provide valuable theoretical ideas over the role and function of universities in these systems together with methods, strategies and mechanisms universities could apply when involved in establishing these systems. Fu Xiaodong considers that universities, possessing its peculiar role in the regional innovation system, could not only accomplish some research and development tasks but also fulfill the training and knowledge dissemination function. He also thinks that more importantly, their major mission will be to contribute more innovative talents to the regional innovation system in the future (Fu, 2001). Wang Dongwu and other authors proposed that university should be integrated into the regional innovation system construction, However, after analyzing the relationship between university and the regional economic development, there have been found many limiting factors in the process of this integration, Ttherefore concrete measures must be pertinently brought forward (Wang, 2008). Some scholars paid particular attention to the relationship between regional universities and the structuring of innovation system. Ding Yaowu holds that regional universities play great roles in the construction of well-off society, making contributions to economic and social development and providing human resources (Ding, 2005). Sun Xibo states that the function and orientation of regional innovation system endows regional universities with a glorious but tough task in structuring of new regional innovation system. Thus, universities play important roles in technological improvement, education, knowledge innovation and social development (Sun, 2009).

All the above mentioned studies have given us profound inspiration. However, it should be pointed out that, there are still many deficiencies in the existing research, especially in their research objects. The most prominent deficiency is that the existing research mostly sticks to discussion of the universities or regional universities and the

Regional Innovation System, but there is little done in terms of the specific and systematic studies on regional high-level university system. As it is known to all, regional high-level universities are an integral part of China's higher education system. They not only have an important duty to lead and promote the regional higher education and economic and social development, but play a crucial role in the implementation of self-innovation strategy and in the process of building regional innovation system, as basis for knowledge and technology innovation. Thus, in China's higher education system, as well as ~~the~~ in the construction of the regional innovation system, the status and role of the regional high-level university is very special. It cannot be exactly the same as that of the regional universities in general,

but also different from the high-level ~~the~~ national first-class universities. This paper will give a detailed analysis and deep thinking to the following questions: What is the definition of regional high-level university? What is the role of the regional high-level universities played in regional innovation system? How can the regional high-level universities fully realize its potential and more effectively promote the development of the regional economy and society in the background of implementing independent innovation strategy and building an innovation-oriented country?

The definition of regional high-level universities

"High-level university is either a specific concept under the generic concept of university, or a generic concept including many specific concepts". Regional high-level university is a kind of specific concept under high-level university. "Different specific concepts have different connotations. The different connotations lead to diversified extensions (Zhai & Wang, 2010)." Therefore, we need to firstly define the connotation of the regional high-level university to discuss the regional high-level education and constructing regional innovation system.

As the name suggested, "regional high-level university is featured as both the nature of locality and high-level (Zhu, 2008)." Consequently, starting from these two features can help us to deepen the understanding of the connotation of regional high- level university. It is easy to understand the locality, which mainly reflects the features of administrative subordination relations. Namely, regional high-level university belongs to the category of regional universities, the administrative subordination relations of which demonstrate distinctive regional features and are obviously different from higher education institutions belonging to the central departments and commissions. Generally, the regional higher education institutions have the following features: in terms of the management system, they are under the competency of regional governments. Regarding service functions, they serve the local region. In the aspect of funding, they are mainly funded by the provincial or municipal finance (Zhang, 2010).

"High-Level" mainly reflects the hierarchical features of regional high-level universities. However, compared to the locality, people's understanding of the connotation of high-level is more complex and diversified. This is because high-level university is a dynamic and comparable concept, which has no fixed standard. Universities with different tasks and development objectives, different types and levels may become the high-level university through certain development according to

certain standards. Consequently, it is only meaningful to understand the concept of high-level university within certain scope.

It is known that the concept of high-level university is firstly proposed by the Chinese government and emerged in the 211 Project and 958 Project. With the launch and advancement of these projects, the campaign of establishing the first-class universities and high-level universities has been launched in China. The scope of Project 211 can be divided into three layers. The first layer is to establish the world's first-class universities. The second layer is to establish the national first-class universities and the third layer is to establish regional demonstrative high-level universities. The first layer focuses on the key universities supported by 985 Project. The second layer focuses on universities included in Project 211 and several universities not included in Project 211, but with profound history and huge potential. The third layer includes regional universities and even universities that will be established in the future (Zheng et. al. 2006). Here, the regional high-level universities refer to universities at the second layer mentioned above. Specifically, they refer to those under the competency and management of regional government administration and supported by the regional finance and- aiming to become the national first-class universities and some universities not listed in Project 211 but with profound history and huge development potential as well as outstanding regional influence and whose comprehensive level equals or getting closes to that of universities listed in Project 211. In China's higher education system, regional high-level universities are located in the middle connectin the high-level and low-level universities. Compared to national top universities, they lie in a marginal position. However, compared to regional ordinary higher education institutions, they lie in the central position. Due to such special position between two ends, on the one hand, these universities need to fully learn from the first-class universities, strengthen their own features, improve human resource quality, innovate in scientific system and improve teaching resources. On the other hand, they need to act as an example for the ordinary regional universities in the aspect of scientific development and integrating to the local region and local services. "Hereby, the regional high-level universities have a clear objective: based on the local region, serving the whole nation, forging ahead to the high-level research institutes with international reputation and distinctive features (Zhu, 2008)."

The status and role of regional high-level universities in regional innovation system

Since the British scholar Freeman firstly referred to the 'state innovation system' in 1987, the establishment of state innovation system has gradually become a common consensus for all countries. The state innovation system has also become a symbol of national innovation capability and core competitiveness. The regional innovation system is an important part of the state innovation system and extends the system to the regional level, which shows the hierarchy of state innovation system. "Constructing a perfect regional innovation system will lay a solid foundation for state innovation system and also a basic guarantee for improving regional innovation capability (Ding, 2005)." The development of regional high-level university and regional development are closely related and mutually interacted with each other. In the process of constructing regional innovation system, the regional high-level universities play a very important role as an important base for knowledge and technology innovation.

Regional high-level universities are a core element of constructing regional innovation system

"Regional innovation system is a kind of organization and system established through gathering and integrating innovative elements in the society at the regional level (State Innovation System Construction Strategy Research Group [SISCSRG], 2008)." It includes body elements, resource elements and environmental elements. The body elements refer to the behavior bodies of technology- innovative activities involving the regional government, enterprises, research institutes and universities. Among these elements, universities are indispensable. Universities not only provide intelligent support for the sustainable development of the society through training talents, but also direct knowledge, technology and product supports for the society's sustainable development through scientific research activities along with being an indispensable condition for implementing the sustainable development strategy (National Academy of Education Administration [NAEA], 2003). The regional universities are not only an important part of, but also the talent base and driving force for the regional development. There is no doubt that regional universities are one of the indispensable body elements for regional innovation system to promote regional sustainable economic development (Huang & Lu, 2009). In particular, as a leader of regional universities, the regional high-level universities are the core body

element in the regional innovation system relying on such advantages as strong research capability, wide range of disciplines, technology talents and advanced lab facilities. Regional high-level universities play a leading and catalytic role in constructing regional innovation system. To corroborate this, we can get proof from the data which Jiangsu province made:

Chart 1. The statics of universities serving Jiangsu Province in Science and technology of 2007

NO.	First level statistical index	Subordinate universities (Numbers: 9)	Regional universities (Numbers: 31)
1	The number of science and technology bases	172	458
2	Science and Technology Achievement Awards	61(Provincial award 51)	220(Provincial award 46)
3	The number of science projects and groups	3537	4851
4	The number of patents	1007	1102
5	The number of science and technology project	4422	2601
6	Science and technology funds / Million	80506,9	76694,4
7	"Four Items" Technology development, technology transfer, technical consulting, technology services funds /Million	79367,8	57110

From Chart 1 we can see, in the aspect of "Base of science and technology", "Science and Technology Achievement Awards", "project or group" and "patent", the regional high-level universities as the main body of the regional universities show a better performance than the Subordinate ones.–Although, there is a certain gap between them on the three other indicators like "Science and technology project identification", "Science and technology funds" and "Four Items", the gap is not obvious. Thus, the regional high-level universities as the main body of the regional universities are playing a more and more important function in the regional innovation system.

Regional high-level universities are a key place to train regional innovation talents

In the time of knowledge economy, human resource has become the most important element and the most practical indicator of productivity for state and regional economic and social development, which is also the foundation for constructing an innovation-oriented country. Therefore, training of innovative talents is the key for strengthening regional technology innovation system construction. It is known that higher education is an activity to train high-level professional talents. "Higher education institutes are committed to training high-level talents with innovative awareness and capability. They are not only an important part of production and technology knowledge, but also an important base for knowledge transmission and providing excellent talents for other participants in the state innovation system (SISCSRG, 2008)." Regional high-level universities are normally leading regional universities. They recruit a large number of excellent students in the region and train a large number of high-quality innovative talents featured as "capable, retainable and practical" for the regional social and economic development. They become the main base for training regional innovative talents and provide strong human resources and intelligence support for regional social and economic development. For example, as the only municipal university listed in Project 211, Beijing University of Technology is one of the key universities recruiting the largest number of Beijing students. Over the last 50 years since foundation, Beijing University of Technology has been committed to "serving Beijing and training practical talents for Beijing's development" and adheres to the features of "combining knowledge and practice and focusing on innovative and practical teaching (Guo, 2011)."It has trained over 100 thousand students (over 10,000 master and PhD. graduates) for Beijing's social and economic development. These graduates play a leading role in all walks of life. Currently, Beijing University of Technology has become the basis for training high-quality and high-level innovative talents.

Regional high-level universities are the main body of knowledge innovation and the major driving force for technology innovation

Knowledge innovation is a process of obtaining new knowledge of basic science and technology through scientific research, including fundamental and applied research. Knowledge innovation is the foundation of technology innovation, an origin of new technology and new invention, and a revolutionary force to promote science advancement and economic growth. Knowledge innovation provides new

theories and new methods for human beings to know and change the world, and provides an inexhaustible force to promote the advancement of civilization and social development. Regional high-level universities are an important force for knowledge innovation. Through such scientific researches as basic research, applied research and experiment development, they continuously make progress in exploring truth, promoting culture, fostering discipline integration, making breakthroughs in science and technology, key material and equipment and creating a large number of new theories,- methods, and technologies to provide technological and policy supports for constructing regional innovation system. Meanwhile, the regional high-level universities use their accumulated advantages in talents and disciplines to actively participate in technology innovation based on enterprises while conducting basic research and technology innovation. They have become an active promoter and participant of technology innovation. For example, In recent years, Zhengzhou University has been successful in actively strengthening the technology innovation system focused on engineering technology and applied research, by striving to improve its technology innovation-capability; they did a great job on serving social and economic development of Henan province.

Academician Huo Yuping hosted the research of wheat seedling after ion implantation, which provides a new method to improve wheat varieties and quality. Academician Shen Changyu undertook the research on key protection equipment of Shenzhou-7, such as astronaut helmet and ways of leaving the cabin. The research results are highly recognized by related organizations and experts.

Regional high-level universities are an origin of regional innovation culture

To build an innovation-oriented country requires not only high-quality innovative talents and active innovative science and technology that promote productivity and social progress, but also the advanced and innovative culture, that would motivate and guide social and cultural development (Province-Ministry Joint Task Research Center of the Ministry of Education [PMJTRCME] , 2008). It is known that university is an offspring of cultural development. It has profound cultural deposit and undertakes the responsibilities to select, criticize, guide and create human cultures. Therefore, in the process of constructing regional innovative system, the regional high-level universities can not only provide direct intelligent support for the regional development as a scientific and cultural center in the region, but also play a leading role in enriching regional cultural connotation, increasing cul-

tural atmosphere, and shaping humanistic spirit, to become an origin of regional innovative culture.-

An Approach for Regional High-Level Universities to Participate in Regional Innovation System Construction

There is no doubt that the construction of innovation-oriented state and regional innovation system not only provides an unprecedented opportunity for the development of regional high-level universities, but also brings large challenges. Under such background, actively participating in and guiding regional innovation system development, serving the regional economic and social development and improving the overall innovative capability are not only the basic responsibilities of high-level universities, but also the only road to the strategic development (Duan, 2008). In the following part, we intend to perform a comprehensive analysis of the related research and the functions of Research Foundation, and then propose several thoughts and suggestions on how regional high- level universities further integrate into and fully play the role in the regional innovation system construction so as to effectively promote regional economic and social development.

Regional high-level universities shall clarify their position in state innovation system

In recent years, with continuously deepening the popularization of higher education and higher education system reform in China, universities have more prominently demonstrated a trend of hierarchical, diversified and differentiated development. Different types of universities have different human resource bases, advantageous discipline resources and research infrastructures. Therefore, the positions in the state innovation system are different for different types of universities. Based on this, if the regional high-level universities want to further integrate into and fully play the roles in regional innovation system construction, they firstly need to clarify their roles in state innovation system and confirm their responsibilities. Accordingly, they need to formulate the specific development objectives combining their own characteristics to guide the future development. For example, in terms of scientific research, the research-oriented universities included into Project 985 are the core part of state innovation system. They not only have excellent scientific talent forces,

but also have strong science and technology infrastructure. For such universities, on the one hand, their research shall focus on basic research areas. On the other hand, they undertake the tasks of conducting applied research needed by the national key strategies. The regional high-level universities, also possess better human resources and technology infrastructure. However, under the influence of such factors as service scope and discipline structure, their research shall focus on applied research to complement basic research activities. They could combine their science and technology innovation development plan with the regional plan. They could also make scientific and technological achievement to contribute to the regional social and economic development in line with regional development strategy and social needs. Furthermore, regional high-level universities can actively participate in the key research to contribute to the regional social progress and industrial development and for example, intending to increase the cooperative strength in related-areas, and striving to reflect the advantage in the progress of regional innovation system construction. Tianjin Polytechnic university had brought the Binhai new area innovation system into the school's long-term development plan, and further combined the modern textile, pharmaceutical, electronics industry and other targets. All this had brought positive results.

Strengthening the construction of the innovation system for regional high-level universities

"The development of independent innovative capability is the foundation for universities to take part in the regional innovation construction (Zhao, 2008)." The capability of independent innovation is related to the level of discipline and teaching capability, the quality of talent training, the knowledge contribution and comprehensive service capability of universities to the society along with the realization of strategy to build an innovation-oriented country. Under the background of building the power of higher education: the study on development strategy of high level regional universities, which is a national education, science and planning issues, was conducted by the author. According to the preliminary ophase research, it manifests that the most interviewees thoughts that the innovation ability of the high level regional universities was shape in the progress of development of the regional innovation system.

Therefore, if we want to integrate regional high-level universities into the regional innovation system and fully reveal their roles, we need to further strengthen innovation system construction to improve the independent innovative capability.

The construction of regional high-level universities is not only a conceptual innovation, but also a practical exploration. Firstly, the regional high-level universities shall raise the awareness of innovation system construction, actively promote the transformation from close to open manner, and largely foster the transformation of teaching ideology from knowledge-oriented to innovation-oriented and the management concept from issue-oriented to human-oriented. Based on the concept of transformation, in order to achieve the progress of innovation system construction, we must take practical measures in line with our situation. The regional high-level universities shall establish the knowledge innovation system combining scientific research with higher education, and largely strengthen basic research. They should deepen knowledge innovation from the original source and become the think tank and base of regional innovation to exert radiation and demonstrative influence and promote regional innovation development. The strategic cooperation and communication among regional high-level universities and other universities shall be promoted. The regional high-level universities and other universities shall combine and integrate resources to foster interdisciplinary interaction to achieve more innovative progress. They should strengthen basic and engineering research innovative platforms and make efforts in commercialization of research results. They should also strengthen the construction of philosophic and social science innovation base, actively serve the region, innovate service models, establish regional innovation system with their unique features and advantages and strengthen the supportive role of scientific innovation to regional social and economic development.

Improving the system, innovating mechanisms and creating a sound innovative cultural atmosphere

"The process of innovative activities is similar to a life cycle. The participants of innovation system continuously explore, look for new innovative resources and heading for the market-oriented and project-oriented development. In order to foster such development and smooth this process, we must have an innovative cultural environment. A kind of excellent cultural environment is the prerequisite and basis for all technologies and system innovation. The innovative cultural environment relies on the comprehensive system construction. The security mechanism is also needed (Zhao & Zang, 2008)." Firstly, for the government, in particular, the regional government shall create a sound environment for universities to participate in regional innovation system construction from macro systems, policies and measures perspectives. For example, regarding the investment mechanism, the

government could increase scientific research investment and expand the funding source channel for regional high-level universities. The government could provide preferential policies for regional high-level universities in such areas as land and taxation to support the construction of university technology park and high-technology enterprises. The mechanisms and system shall be available to promote the commercialization of research results and encourage regional high-level universities to make contribution to regional economic development, to sell and transfer research achievement and technology and to support productive elements to participate in allocation based on intellectual property rights (PMJTRCME, 2008).

Regional high-level universities shall further improve the management system and mechanism in line with the requirements of social development and state policies. They shall improve the related policies, enhance the technology development plan and establish a sound mechanism to make technology better serve the society Zhao & Zang, 2006). For example, by deepening the reform of Scientific research management system and mechanism on two-level (university and college (Beijing university of Technology has solved the problems which are not corresponding with technology innovation demands. And to ensure technology innovation by system innovation (to drive the whole development by distinguishing features, Beijing university of Technology provided a perfect system of guarantees and incentive measures for science & technology innovation. So, all these makes contribution for an efficient implementation of Servicing Beijing City Action.

These universities shall clarify the management mechanism and the operational methods of various innovative elements in university management system. The interests and obligations shall be distinguished according to the market rules. These universities shall improve the asset allocation mechanism and the evaluation mechanism to encourage performance, innovation, competition, coordinating development and increasing the value through innovation and to effectively motivate the potential of various innovative elements. They shall also strengthen the innovative culture construction, promote practical and selfless scientific spirit, and create an innovative atmosphere featuring interest in science, harmony, inclusiveness, democracy and equality to create sound conditions for innovative talents to innovate in universities. In addition, regional high-level universities and their subsidiary schools shall establish the working mechanism to participate in regional innovation system construction. The personnel shall be appointed to be in charge of this task. If applicable, the schools shall establish the special units with staff equipped to guide and serve ~~for~~ the regional innovation system construction.

Strengthening the communication and cooperation between regional high-level universities, research institutes and enterprises to complement advantages among various innovation bodies

The domestic and international research results show that the interaction between different participants in the innovation system is significant. Therefore, we shall actively promote the communication and cooperation between regional high-level universities, research institutes, enterprises and other regional innovation agents in the process of constructing regional innovation system. Such interaction, would complement the advantages among different participants and promote the regional innovative system construction. Firstly, regarding the cooperation between regional high-level universities and state research institutes, it is known that these two innovative bodies have not yet realized the benefits of collaboration at the current development level in China. They are separated by various historical and systematic reasons. Their functions are also varied to some extent.

Thus, the limited scientific resources do not achieve the optimized allocation. This is also the case for the regional high-level universities. Although the overall research capability of regional high-level universities is weaker than thatof national first-class research-oriented universities, they have relatively strong capability in certain areas. They can strengthen the cooperation with other research institutes at the state and other levels and play their due role in regional innovation system. "Such integration and communication shall not only include the communication and cooperation between people, but also include the joint establishment of research mechanism and improvement of joint talent training system (SISCSRG, 2008)."

Secondly, regarding the communication and cooperation between regional high-level universities and enterprises, as we know, the cooperation among enterprises, universities and research institutes is an important channel for universities to serve the regional innovation system construction. In the past, universities had cooperated with enterprises through such model. However, this model has many flaws. This is mainly because enterprises are lacking ~~of~~ innovative motivation. Enterprises passively wait for universities or research institutes to provide research results. In addition, universities undertake the task of commercializing research results. They are also responsible for market research and exploration (Wan, 2005). The most effective measures and ways for strengthening cooperation between regional high-level universities and enterprises is to establish the long-term stable and mutual-benefit strategic alliance and a cooperative innovation platform integrating the advantageous technology resources into the development of pillar and emerging industries as well as the regional innovation system in the market . Such platform would help to realize the cooperation among enterprises, universities and research institutes shifting from short-term, loose and

single-project cooperation to long-term close and systematic cooperation. Under such model, enterprises are driven by the market and linked to technology and product innovation relying on university research strengths. Enterprises can share technological risks and bridge the gap of professional knowledge and lab facilities so as to build the continuous independent innovative capabilities. The regional high-level universities can communicate with the market and society based on the enterprise platform. As such, regional high-level universities can be continuously motivated to make technology innovations and conduct researches based on the needs of regional economic and social development. They could also cooperate with enterprises to overcome technology problems and provide technology support for regional industrial restructuring and sustainable economic development. For example, in order to promote the union of CEEUSRO(CEEUSRO is the most direct mode of Sci-Tech Cooperation between Colleges, Research Institution and Enterprise, it's the common characters of Integrated Development of Science (Economy and Education, and also it's the important link of Sci-Tech Research and the Training of Creative Talents) (further the construct of capital science and technology innovation system,

Beijing University of Technology had successively signed a strategic cooperation agreement with Beijing Pharmaceutical Group and BBMG and other regional leading enterprises. Therefore, the strategic alliance of CEEUSRO was founded and provided motivation for creative development off the enterprises. Besides, as a core membership of industrial technology alliance, Beijing University of Technology plays a key function in the process of knowledge creation and technology innovation ion advanced manufacturing industries, new materials, environmental protection and other areas. This powerfully promotes the construction and development of capital technology innovation system.

Conclusions

As a vital part of the Higher education system, regional high-level universities laid the foundation for economic and social development. Regional high-level universities not only played a great role in promoting educational, economic and social development, but also provided high-level innovative talents and lead the regional and national independent innovation which is their external requirement. Thus, as the core element in the structuring of new regional innovation system, regional high-level universities are the forerunners of regional innovation system and the of

innovative talents. Moreover, high-level universities are also considered as the driver of regional innovation and the source of new innovation culture. In the context where all the countries strengthen the construction of national innovation system, improving the ability of independent innovation and building the innovation country, regional high-level universities must orientate themselves in the new national innovative system and define their task in this system. In addition, it is necessary to strengthen the construction of innovative system, innovative capacity, mechanism, innovative culture and achieve mutual benefit between the main actor through intensified cooperation with institutions and organizations. Only in this way, high-level universities will play their role more effectively in structuring regional innovation system, promoting development of the society and regional economy.

References

Ding, Y. (2005). Regional innovation new system and the development of regional universities. *Education Theory and Practice, (03),* 8–10.

Duan, B. (2008, April 18). University shall actively take part in and guide regional innovation system construction. *Guangming Daily.,* p, A07.

Guo, G. (2011). Integrating Beijing innovation system: Realizing the harmonious interactive development between Regional universities and regional economic and social development. *Beijing Education (Higher Education Version),. (01),* 5–8.

Huang, J. & Lu, L. (2009). The Value of Regional Universities in Constructing Regional Innovation System. *Hebei Normal University Journal (Education and Science Version), 11. (08),* 19–22.

National Academy of Education Administration. (2003). An outline of higher education. Tianjin: Nankai University Press P. , 105.

The People's Daily. (2006, Feb 10). Outline of the National Program for Long- and Medium-Term Scientific and Technological Development. *The People's Daily.,* p, A001.

Province-Ministry Joint Task Research Center of the Ministry of Education. (2008). The strategic Development research on universities jointly developed by province and ministry. Taiyuan: Shanxi Education Press P., 101.

State Innovation System Construction Strategy Research Group. (2008). National innovation system development report 2008. Beijing: Intellectual Property Presa P., 125.

Wang, G. (2005). How higher education institutes play more important role in state innovation system. *China Higher Education., (24)*, 21–24.

Wang, A. (2008). Theoretical exploration of university integrating into the construction of regional innovation system. *Journal of Wuhan University of Technology (Social Science Edition., 21(04),* 583–585.

Zhai, Y. & Wang, Z. (2010). An Analysis of High-Level Universities, *Fudan Education Forum, 02(088)*, 54–57.

Zhu, K. (2008). Expenditure Perspective: Challenges and Development Opportunities Faced by Regional High-Level Universities. *China Higher Education Research:, (07).,* 36–39.
Zhang, J. (2010). The Development of regional universities: Reality and dream. Hubei: Huazhong Normal University Press.-, 4.
Zheng. Y. et. al. (2006). The Development strategy of universities. Beijing: People Press. pp.135–136.
Zhao, A. (2008). The university development strategy in regional innovation system construction. *Heilongjiang Higher Education Research. , (11),* 43–45.
Zhao, M. & Zang, L. (2006). The role and inspiration of American universities in state innovation system. *Jiangsu Higher Education. (06),* 130–133.

Transformation in Chinese higher education

Chapter 12

Undergraduate teaching quality evaluation of Chinese higher education institutions: Practices and future directions

Zhihong Li

Developmental history of China's higher education evaluation

Higher Education Evaluation in China commenced in 1985. At the very beginning, its main job was to conduct a pilot evaluation of degree programmes as well as researches on institutional evaluation. *Draft Regulation of Higher Education Institution Evaluation*, the first regulation on higher education evaluation, was issued in 1990 by Chinese government. According to this document, the Ministry of Education (MOE) initiated the undergraduate teaching evaluation of Higher Education institutions (HEIs) in 1993. Three forms of evaluation had been piloted – ligibility evaluation, optimization evaluation and random evaluation.

The eligibility evaluation was compulsory for new baccalaureate-degree-granting HEIs which were established or upgraded after 1978. It emphasized encouraging these HEIs to clarify their missions and goals, shaping the philosophy of teaching, standardizing the administration of the teaching process, enhancing the competence of teaching force, and improving the conditions of teaching and learning. By the end of 2002, 222 colleges and universities in total had participated in eligibility evaluation. Compared with the eligibility evaluation, the optimization evaluation was voluntary and mainly focused on about 100 HEIs which were under the national key construction projects. The aims of optimization evaluation were to strengthen teaching and learning in these HEIs, and to share their successful experiences in edu-

cation with other HEIs within Chinese higher education system. By 2002, 18 HEIs had voluntarily participated in optimization evaluation. The random evaluation was designed for the regular HEIs which were neither new baccalaureate-degree-granting, nor under the national key construction projects. The MOE attempted to establish an enduring mechanism of higher education quality assurance by randomly selecting HEIs to implement this kind of evaluation. Seven HEIs have undergone random evaluation so far. All three forms of evaluation shared the philosophy of "*promoting the development by the evaluation*", and had made great achievements. In particular, the eligibility evaluation had been widely acclaimed by the HEIs and the public since it facilitated the new baccalaureate-degree-granting HEIs to make progress.

Since 1999, Chinese higher education system has entered into an era of fast growth. Rapid expansion on the scale of higher education brought great challenges to teaching in almost all the HEIs. Improving teaching conditions, reinforcing standardized administration and assuring education quality has become their primary tasks. Under this circumstance, the MOE integrated the existing three evaluation forms and launched "Scalar Evaluation of Undergraduate Teaching Quality" in 2003, which cycled every five years. The *Action Plan of Education Innovation 2003-2007*, which was approved by the Chinese State Council, ensured the validity of this new national higher education evaluation system. By the end of 2008, the first cycle of evaluation had been accomplished, and in total 589 HEIs have undergone this process.

Meanwhile, tertiary vocational colleges which accounted almost for half of the Chinese HEIs have participated in *Evaluation of Undergraduate Education in Vocational Colleges*. The evaluation plan was formulated by the Chinese government and implemented by each provincial education administration department.The MOE checks on its implementation periodically. By the end of 2008, about 600 vocational colleges had completed the evaluation. Nowadays, there are 1215 vocational colleges in Chinese higher education system, most of which are newly founded in the recent decade. Therefore, the second cycle of *Evaluation of Undergraduate Education in Vocational Colleges* is transformed to the eligibility evaluation, which has two resultant categories: "pass" and "conditional pass". More than 100 vocational colleges have undergone this new evaluation project.

Furthermore, the MOE launched a pilot accreditation project of baccalaureate professional education in 2006 by cooperating with several professional associations from machinery, electrical, chemistry, architecture and medicine areas. More than 100 HEIs have voluntarily participated in this accreditation project by now.

Higher education evaluation in China is driven by the government. Two specialized organizations take charge of the evaluation at the national level. One is the

Higher Education Evaluation Center (HEEC) which focuses on undergraduate education evaluation. The other is the China Academic Degrees & Graduate Education Development Center (CDGDC) which is responsible for postgraduate education evaluation. Both of them are affiliated to and funded by the MOE.

Education administration departments of the provinces, autonomous regions and municipalities have their own education evaluation institutes or centers, the total number of which is 15, including Shanghai Educational Evaluation Center, Jiangsu Agency of Educational Evaluation and etc. HEIs also set up administrative offices of quality assurance and evaluation. Recently, the HEEC in cooperation with these organizations established the National Association of Higher Education Quality Assurance and Evaluation Agencies in order to strengthen professional exchange and self-regulation.

The first cycle of the scalar evaluation of undergraduate teaching quality: effectiveness and deficiencies

The first cycle of the Scalar Evaluation of Undergraduate Teaching Quality from 2003 to 2008 focused on promoting school construction on questions before the evaluation. The working principle is '*facilitating constructions by the evaluation, promoting administration by the evaluation, accelerating educational reform by the evaluation, connecting evaluation with construction, and emphasizing the priority of construction*'. Two primary goals have been set for this evaluation cycle. One is to improve the teaching conditions in HEIs to reach the national basic criterion, while the other is to standardize the administration in HEIs.

Within these five years, 589 baccalaureate HEIs and more than 600 vocational colleges have been involved in the evaluation, which was considered to be a massive movement of quality assurance in the developmental history of Chinese higher education. With the purpose of examining the effect of the first five-year evaluation cycle, a research team leading by Dr. Li Yanbao from Sun Yat-Sen University was commissioned to conduct a national survey of the evaluation of undergraduate education teaching. Over 4000 questionnaires were distributed to the HEIs and provincial education bureaus while more than 100 senior teachers who won the National Teaching Master award were interviewed. According to the survey results, Table 1 shows the effects of the first cycle evaluation on different aspect of teaching and construction in different types of HEIs.

Table 1. The Effects of the First Cycle Evaluation on Different Aspects of Teaching and Construction in Different Types of HEIs (%)

Items	Universities with graduate schools	"985 "/ "211" universities	Provincial universities	Other HEIs
1. Clarifying the mission and goals, and sharpening the special characteristics of the university	83.5	77.3	87.7	87.8
2. Strengthening the central position of undergraduate teaching	68.8	63.5	84.7	90.9
3. Enhancing quantity and general structure of the teaching force in recent three years	49.2	48.4	72.4	72.1
4. Improving the teaching quality	47.8	42.6	60.3	59.1
5. Improving the basic teaching resources and facilities in past three years	60.3	64.5	78.3	72.7
6. Improving the conditions in school buildings	45.3	48.7	56.3	40.9
7. Construction of the learning bases in the laboratories	54.0	45.2	60.1	45.5
8. Space and openness of the library and purchase of books	37.7	37.8	60.1	54.5
9. Development of the campus network	34.0	35.9	42.4	38.6
10. Construction of the playground and gymnasium	44.0	35.3	47.5	31.8
11. Increasing the financial input in teaching in recent three years	31.4	30.9	43.9	39.5
12. Effectiveness of financial input in undergraduate teaching	36.9	37.3	42.4	30.2
13. Adjusting the disciplinary structure and refining the undergraduate programs	48.1	37.7	61.0	51.2
14. Improving the teaching content and curriculum structure	47.4	36.1	51.9	46.5
15. Input to the research on undergraduate teaching	27.6	22.4	32.2	30.2
16. Textbook compilation, selection of excellent textbooks, and regulation construction	31.3	28.2	33.5	20.9
17. Improving teaching methods	30.8	23.7	39.3	44.2
18. Construction of practice learning system and student innovative research activities	53.1	47.4	57.9	48.8
19. Integrative experiments and the accessibility of the laboratories	50.0	42.9	51.5	46.5
20. Construction and effectiveness of teaching and quality assurance system	69.0	66.0	83.6	85.7
21. Morality and professional dedication of the teachers	39.1	34.8	53.5	45.2
22. Students' awareness of being disciplined and law-abiding, and enthusiasm for study and participation in extracurricular activities	35.2	31.4	40.4	46.5
23. Cultivating the students with the basic theoretical knowledge, skills and innovation competence	40.4	39.4	48.8	42.9
24. Quality requirement of the crucial links in undergraduate programmes, such as graduati on thesis/project	62.5	58.1	81.4	83.7
25. Enhancing the public reputation of the university	50.2	43.9	61.5	51.2

Note: Percentage of the respondents who answered 'very effective' or 'effective'
(Source: Li Yanbao, 2009, p73-78)

Taking the result of provincial universities as an instance, among 25 questionnaire items in Table 1, five aspects which were reported to be most positively affected by the first cycle evaluation were as follows.

(1) Clarifying the mission and goals, and sharpening the special characteristics of the university. (87.7%)
(2) Strengthening the central position of undergraduate teaching. (84.7%)
(3) Construction and effectiveness of teaching and quality assurance system. (83.6%)
(4) Quality requirement of crucial links in undergraduate programmes, such as graduation thesis/project. (81.4%)
(5) Enhancing quantity, quality and general structure of the teaching force in recent three years. (78.3%)

This result indicated that the original goals of the evaluation were achieved. In particular, it strengthened the central position of undergraduate teaching, reinforced the awareness of educational quality, promoted the betterment of school conditions, facilitated the standardization of administration in HEIs, and explored and formatted the higher education quality assurance system with Chinese characteristics. It was highly valued by the educational administration bureaus and HEIs and broadly approved by the higher education sector and the public.

Among 25 questionnaire items in Table 1, the following five aspects were least affected by the first cycle evaluation:

(1) Input to the researches on undergraduate teaching. (32.2%)
(2) Textbook compilation, selection of excellent textbooks, and regulation construction. (33.5%)
(3) Improving teaching methods. (39.3%)
(4) Students' awareness of being disciplined and law-abiding, and enthusiasm for study and participation in extracurricular activities. (40.4%)
(5) Effectiveness of financial input in undergraduate teaching. (42.4%)

It indicated that the effects of the first cycle evaluation was limited, which meant that it could not solve all the teaching problems. Especially, its effect on motivating the teachers and students was not as obvious as expected.

In addition, most of the survey respondents and interview participants agreed that the 2003–2008 evaluation has its own deficiencies and needed to be improved with regard to several issues. First, it lacked specific evaluation and instructions for different types of HEIs. Second, the pace of the evaluation might be too fast

to assure its quality. Third, in some cases the evaluation appeared to be formalist because some of the HEIs put too much effort in obtaining excellent scores without appropriate guidance and administration from the government. Last but not the least, the evaluation results relied mostly on site visit by the external experts and lacked monitoring the ordinary state of undergraduate teaching.

Future directions of the evaluation of undergraduate education teaching in Chinese HEIs

In June of 2010, the Chinese government issued the *National Outline for Medium and Long-term Education Reform and Development (*The State Council of the People's Republic of China, 2010*)*, which has clear claims on strengthening the teaching quality assurance system and improving the evaluation of undergraduate education teaching in Chinese HEIs. According to this document, the principles for evaluation of teaching of HEIs are adhering to the periodical evaluation system and to improving the teaching evaluation practices. Future directions of the evaluation are facilitating the internal construction, promoting reform and innovation, directing characteristics development, improving the quality assurance system, and enhancing teaching quality.

The following measures will be taken.

1. Conducting various types of evaluation which suit different HEIs to improve the overall education quality.

According to the new demands of the current development of higher education quality in China, five types of evaluation will be conducted:

(1) self-evaluation, which facilitates all the HEIs to play a principle role in quality assurance respectively and forms a self-developmental, self-regulated, and enhancement-oriented mechanism.
(2) institutional evaluation of undergraduate teaching quality, which includes both the eligibility evaluation mode and audit mode.
(3) programme accreditation and evaluation.
(4) international evaluation and accreditation to encourage first-class universities to undergo programme evaluation and accreditation conducted by high-level overseas peer reviewers.

(5) regular teaching quality database monitoring: to develop the National Database of HEIs' Teaching Quality Status Indicators.

2. Implementing the categorized evaluation to help various types of HEIs develop their distinct characteristics respectively.

At the end of 2010, there were 790 regular institutions of higher education, with over 300 independent institutions. Considering the inter-institutional differences such as educational level, school type, history etc., the evaluation will make efforts to promote the development of various types of HEIs and help them construct their distinct characteristics. The mode of evaluation will sequentially transform to an audit process, if a HEI has already been approved to be qualified in the first cycle of evaluation of undergraduate education teaching. In 2012, the eligibility evaluation of the HEIs, which are established after 2002 and have not participated in the first evaluation cycle, will be conducted. Eligibility evaluation of the newly-established HEIs was initiated in 2011 by the HEEC of MOE. More than 150 newly-established HEIs will undergo this evaluation process over the next two-three years. From then on, newly-established HEIs which have had graduates for two years are required to pass the eligibility evaluation run by the government. In the future, there will be at least four types of evaluation in China's higher education system. Besides the two types that we just mentioned above, there will also be a special evaluation project developed for more than 300 independent institutions (running privately) and the *Evaluation of Undergraduate Education in Vocational Colleges Project* which is focused on associate degree education.

3. Weakening the categorical structure of the evaluation results.

Three basic requirements were emphasized in the evaluation of the newly-established HEIs. Firstly, the teaching conditions meet the national basic criterion. Secondly, the administration of HEIs is standardized. Thirdly, education quality is guaranteed. Three resultant categories are used currently, namely "pass", "conditional pass" and "fail" in order to overcome the excessive pursuit of "excellent" score typical for the last evaluation cycle of undergraduate education teaching. The HEIs which have once passed the evaluation will transit into audit after five years. The HEIs which have conditionally passed will need to be reevaluated after making appropriate adjustments. If a HEI failed in the evaluation, adding new programmes in this school will be restricted and its enrollment will be reduced by the government.

4. The evaluation will function as a guidance and encourage HEIs to establish the internal quality assurance system

No matter which type the HEIs belong to, the basic idea of the evaluation is "to assist the government and to help HEIs safeguard the quality education". By participating in the evaluation, the construction of undergraduate teaching in HEIs will be promoted, and the internal quality assurance system will also be founded and improved. For instance, 589 HEIs at baccalaureate degree level have passed the first evaluation cycle. For these colleges and universities, the second cycle of evaluation will be a review-based evaluation process which focuses on checking whether these colleges and universities have established internal quality assurance systems and whether their education quality has reached both the national standard and their own educational goals. Theoretically, the review-based evaluation will be conducted once in every five-years. However, if a HEI was found having too many problems in its quality assurance, it will be required to undergo the review process again after a two-year adjustment.

5. Reinforcing the social participation and supervision, promoting the integrity and transparency of the evaluation

The quality assurance process will bring in more participants from the public. Various forms of evaluation such as online evaluation and social evaluation will be explored by collaborating with international agencies in quality assurance and evaluation area. Furthermore, a clean administration system of the evaluation will be established and the regulation will be strictly enforced in order to oppose extravagance, waste and formalism in the evaluation process.

6. Establishing periodical data-publishing system of teaching status, strengthening the supervision of ordinary state of teaching in HEIs

In the future, the HEIs will be required to report the data of teaching status, which will be used as the evidence on quality assurance by the external evaluation experts. The governing body of the HEIs can also use these data to supervise the teaching status. Moreover, selected data and results might be published. A system of annual reports on education quality in HEIs will be set up and available for inquiries and monitoring from general public.

7. Conducting research on national basic standards of education quality

The national basic standards will be studied from various aspects, including the school conditions, the programme and curriculum standards, the quality requirement for the key aspects in undergraduate teaching and learning, the level of teaching performance, the learning outcomes, etc. These researches will be the reference point for the direction and foundation of quality assurance in HEIs.

8. Reinforcing the financial support to quality evaluation

In the last evaluation cycle, the expense was covered by not only the government but also the HEIs who paid for the accommodation of the external experts during the site visit. It consequently brought in unexpected and negative influences to the integrity and seriousness of the evaluation. Therefore, the government will increase financial input and provide special funds to bear all the cost of the evaluation so that the evaluation process can keep its independency and integrity.

9. Emphasizing the publicity, awareness and positive environment

The publicity and communication will be emphasized in order to increase the transparency and public understanding of the evaluation process as well as create a good environment for higher education evaluation.

References

Li Yanbao.(2009). (1985-2008) *Undergraduate Teaching Quality Evaluation Reports of Chinas Higher Education Institutions.* Beijing: Higher Education Press.

The State Council of the People's Republic of China (2010). *National Outline for Medium and Long-term Education Reform and Development (2010-2020).*

Chapter 13

The partner assistance project: An attempt to promote balanced development in higher education between eastern and western China

Baocun Liu & Anmei Zhang & Tengteng Zhuang

Background of Partner Assistance (PA) Project

Partner assistance in higher education on a one-on-one basis sprouted as early as the 1950s and then underwent continuous development in the 1980s and 1990s. The Develop-the-Western-Region Strategy was launched at the beginning of the 21st century to boost the overall development of western provinces, providing tremendous opportunities for further development of western higher education institutions. It was under such a backdrop that the PA Project was launched. The Develop-the-Western-Region Strategy, as the third overall step in China's process towards modernization, largely rests on the quality and quantity of labor forces in various fields to determine its success. The education development in poverty-stricken areas in western regions has lagged behind due to historical factors and the relatively backward economic conditions, along with a weak educational foundation that was not able to meet the overall demand in the western regions. Especially in higher education, obvious gaps exist between China's eastern and western regions in the size, quality, structure and funding of higher education, and the gaps have been enlarging in recent years. The harmonious development of higher education in China depends on the steady development of higher education in the western regions, the narrowing of the gaps in higher education and the coordinated development in different regions. The PA Project is a government-led project aimed at assisting education development in the underdeveloped regions in the west.

Since 2000, the government has carried out partner assistance between eastern and western regions at all levels, and has encouraged all the middle and large cities in eastern and central China to assist in the development of higher education institutions in the west. On June 13, 2001, The Ministry of Education issued the announcement "*The Plan for Partner Assistance to Higher education institutions in Western Regions"*, in which the partnership between 13 pairs of institutions was formed, including a partnership between Peking University and Shihezi University, and between Tsinghua University and Qinghai University. The announcement required one-on-one assistantship, so that eastern assistance-providing universities could offer all-around assistance and cooperation to their western assistance-receiving counterparts. These 13 assistance-receiving universities covered 12 cities in the western regions and Xinjiang Production and Construction Corps, with each city having one university in the partner relationship, and with all 13 assistance-providing universities being key universities affiliated with the Ministry of Education (Cen, 2010).

In September 2006, The Ministry of Education published *The Opinions on deepening the Implementation of Partner Assistance between the Eastern and Western Higher education institutions*, aiming at deepening the implementation of partner assistance to higher education institutions in the west. This document made it clear that the focus of the partner assistance was to improve the education quality of the assistance-receiving universities and to establish a long-term accountability mechanism. In addition, this document also put forward specific suggestions on issues such as faculty development, administration improvement, discipline construction, scientific research, modern information technology, international exchanges and cooperation.

On January 22nd, 2007, The Ministry of Education and Ministry of Finance published *The Opinions on Undergraduate Teaching Quality and Reform Project* (hereinafter referred to as "the Quality project"), carried out the "Project to Ensure Undergraduate Teaching Quality and Transform College Education", and included partner assistance as an important part of its framework. Previously the main source of financial support for partner assistance had been special funding from The Ministry of Education and co-funding from the assistance-providing universities, however, this funding had been too limited to make the project operate smoothly. After this document came into effect, the Quality Project supported the assistance to the higher education institutions in the western regions with funding from the central government. The project has made breakthroughs by providing opportunities for faculties and administrators in western higher education institutions to pursue further studies in the assistance-providing institutions. The project has accelerated the development of the teaching force in assistance-receiving institutions, improved

the quality and management of administrators and realized coordinated and rapid development of higher education institutions in the west.

The guiding ideology of the PA Project is that it should take the social and economic development levels of western regions into full account with the key focus on improving the quality of local higher education. That is to say, it is a core issue to update the quality of talents through achieving the development at the level of disciplines , faculty, administrative systems and operating mechanisms. The improvement of teaching, research and administration capability lays the foundation for the long-term development of universities in western regions.

The objectives of the PA Project are to actively improve talents or professionals' cultivation mode, upgrade the quality of faculty teams, and help enrich the administration and management system of assistance-receiving institutions through partner assistance between eastern and western higher education institutions. The quality of education of the western higher education institutions will be promoted to a new height, so that they will better serve the economic development in western regions. The higher education development gap between the east and the west will be further narrowed for a more coordinated and sustained higher education development among regions, and thus ultimately provide academic impetus for the Develop-the-Western-Region Strategy.

This paper aims at introducing the background and latest progress of the PA project, systematically analyzing the impact of the project, and providing policy recommendations. More importantly, the research techniques of survey, interview, and policy text analysis are adopted to investigate the effect of the project.

Planning and Progress of Partner Assistance (PA) Project

PA Project mainly consists of two programs: faculty and administrators training program, and digital classroom program, both of which started in 2007 and ended in 2010.

2.1 Faculty and Administrators Training Program

This program focused on funding the faculty of assistance-receiving higher education institutions to receive further study at their assistance-providing partner universities.

A number of administrative staff of assistance-receiving higher education institutions

gained practical experiences and went through managerial exchanges at partner universities, so as to improve the quality of administration and management of western higher education institutions. To make the program successful, measures taken by eastern partners and western institutions included:

Attaching importance to the assistance-receiving institutions, and strengthening organizing and leading capability

Most of the assistance-receiving institutions have special working groups under the direction of university leaders, consisting of organization office, staff office, office of teaching affairs and other offices. After consultation with their eastern partner universities, the western partners then formulated a long-term and annual faculty and staff training program. For instance, Jinggangshan University founded a working team led by one of its vice presidents, and coordinated staff traineeship programs with Tongji University in Shanghai (China Education Daily, 2010).

Setting clear goals and requirements to improve rofessional and managerial capability of faculty and administrators

Universities in western parts must track their faculty and administrators who are receiving further study or in-service training. Faculty and administrators also must abide by the rules of eastern partner universities, but more importantly, make planning for their half-year or full-year further study. For instance, Qinghai Normal University has formed a Temporary Party Branch for Faculty and Staff Training at their partner Shaanxi Normal University in order to assist their faculty and staff in setting clear goals and improving their own professional and managerial capability (Shaanxi Normal University, 2008).

Establishing sound operating mechanism to provide platform for faculty and staff practices

Eastern universities arranged advisers for each faculty member and assigned administrative work for *administrators* from their western partner university. It was deemed important that leaders above junior level from eastern universities would be responsible for providing one-to-one guidance for administrators from the west. For

instance, Huazhong Agricultural University, has provided support to the faculty of its partner Tarim University with the characteristics of five "enters" and three "ones" to ensure their successful study. Five "enters" refer to "enter the classroom, enter the teaching and research room, enter the research group, enter the laboratory, and enter the library" while three "ones" mean "one advising professor, one computer, and one worktable" (Zhang, 2011).

Providing sufficient funding and establishing mechanisms to ensure the smooth progress of faculty and administrators program

Since 2007, the Quality Project has altogether provided funding in the amount of 55.2 million RMB for the program, 35.4 million of which is used for faculty training and 19.8 million of which – for staff practices. The Ministry of Education has confirmed the input, management and use of funding by announcement, and all higher education institutions have also set up relevant regulations in this regard. For instance, *Measures for Implementation of Staff and Training Program under Quality Project of Partner Assistance to Xinjiang University* clearly set the goals, management and assessment standards, examination and approval procedures for the usage of funding (Xinjiang University, 2010).

During 2007–2010, PA Project subsidized 2,855 faculty and administrators for further study and traineeships, 2,360 of whom were faculty and the other 495 were staff respectively. Total funding amounted to 35.4 million RMB for the faculty training and 19.8 million RMB for administrator practices respectively, covering 38 higher education institutions.

Digital Classroom Construction Program

Digital classroom construction program is the second important part of PA Project. PA Project constructed a total of 120 digital classrooms at all western assistance-receiving institutions in order to share high-quality educational resources via modern technologies. To ensure the successful implementation of the program, measures taken by the higher education institutions concerned include the following:

Making overall planning

For the successful construction of digital classrooms, the Ministry of Education has handed out project guidelines and application documents, and also has put forward guiding suggestions in this regard. All assistance-receivers consulted with their assistance-providing partner institutions to make overall planning. First, for those with an established campus network, they should build digital classrooms capable of offering simultaneous courses with their eastern partners. Second, for those institutions that haven't established a campus network or are in the process of establishing one, they should focus primarily on building multi-media classrooms and linking them with the campus network, in preparation for offering courses simultaneously provided by their eastern partners in the future. Third, resources of eastern assistance-providing institutions and various national high-quality educational resources should be shared. Fourth, the western assistance-receiving institutions should also develop their digital educational resources in a self-strengthening manner.

Ensuring the adequate funding

The Ministry of Finance, the Ministry of Education and all higher education institutions concerned have actively raised funding to ensure that the average financial input into every digital classroom reaches 200,000 RMB, and the total input reaches 24 million RMB. In the meantime, all assistance-receiving institutions have also actively engaged in collecting funding and most of them have collected as much funding independently as they have received in support. For instance, Xinjiang Medical University independently collected 870,000 RMB for the construction of a digital distant interactive smart recording and broadcasting audio room. Northwest University also raised some 1 million RMB on its own to build digital classrooms.

Strictly managing the program

Since the digital classroom program involves a tremendous amount of funding for different processes such as purchasing large-scale equipment, the Ministry of Education has specifically set the principle of "Overall Planning and Integrated Implementation". All assistance-receiving institutions have earnestly formulated plans for implementation and made detailed demonstrability in various terms such as goals, feasibility and budgets. In the process of implementation , all assistance-receiving institutions have purchased equipment according to the bidding rules. For instance, abiding by these rules, Xinjiang University of Finance and Economics carried out

public bidding for equipment purchasing via the organization of the government procurement center. Later, the cooperation between both the university and winning bidders made the whole program a success.

From 2007 to 2010, the number of Digital Classroom Programs of PA Project reached 120 with the total outlay input of 24 million RMB. There were 35 institutions altogether that received such assistance, covering various western provinces or municipalities including Tibet, Xinjiang, Yunnan, Guizhou, Ningxia and Chongqing.

Effect Analysis of Partner Assistance (PA) Project

In the year of 2007, the Ministry of Education included partner assistance project into the Quality Project and it actively facilitated the progress of partner assistance to higher education institutions in western regions. The PA Project has achieved extraordinary effects.

Faculty and Administrators Training Program

As an important part of the PA Project, the faculty and administrators training program has produced enormous benefits to faculty and administrative staff who have pursued further study at their partner universities for a certain period. These benefits are reflected in a wide range of aspects such as the range and scope of participants, the improvement of teaching capability of faculty, the development of managerial ability of administrative staff and the advancement of disciplines.

A wide range of faculty and administrators benefited from the program

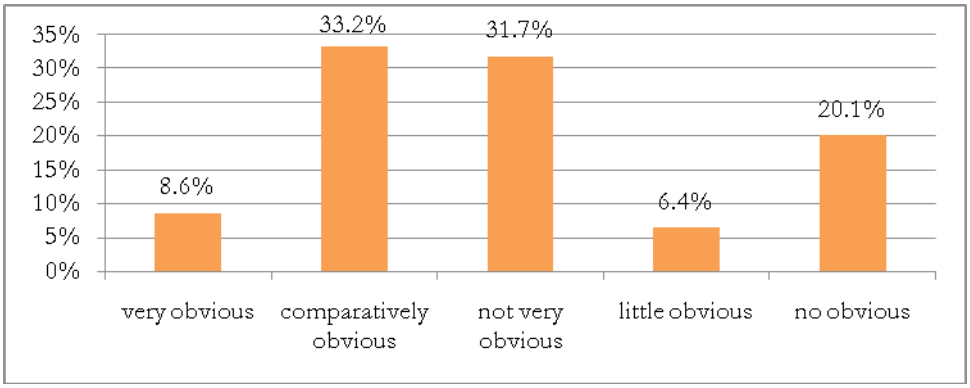
The program targeting frontline faculty and staff has enabled them to upgrade their educational philosophy and administrative ideals through further study in the eastern part of China where the education development is at a more advanced stage. The professional competences as well as educational philosophies and administrative capabilities of assistance-receiving universities have obviously improved.

Teaching capability of faculty and the overall faculty quality has been improved

Because western assistance-receiving universities have sent their key faculty and faculty in the disciplines in urgent need of improvement to study at eastern partner universities, not only individual teachers' teaching ability, but also the overall teaching effect in related disciplines have seen a dramatic upgrade.

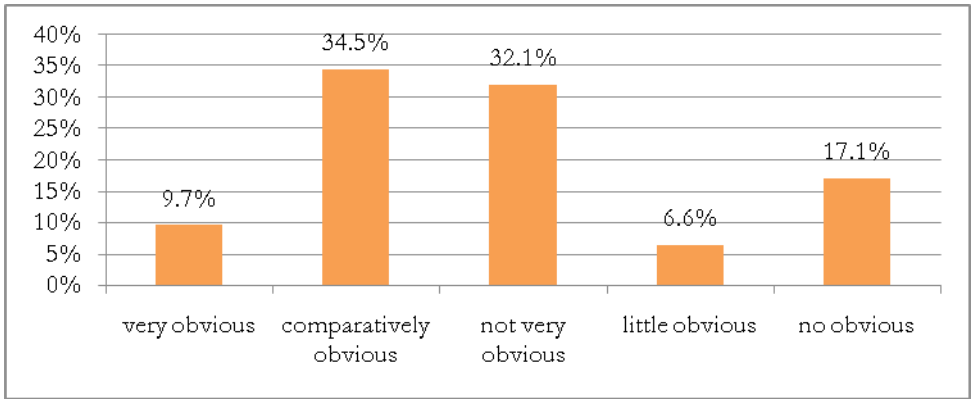
According to the questionnaire of "Project to Ensure Undergraduate Teaching Quality and Transform College Education" for higher education institutions' faculty, there were 8,282 higher education institution teachers who participated in the questionnaire concerning faculty training program at a partner institution. Among all, 8.6% of the participants considered the effect of further study of faculty at a partner university "very significant", 33.2% thought it to be "comparatively obvious", 31.7% selected "not very obvious", 6.4% considered it "little obvious", and 20.1% chose "I don't know".

Figure 1. Higher Institution Teachers' Viewpoint of Effect of Faculty Training Program of PA Project



Apart from higher education institution teachers mentioned above, 3,148 administrative staff members also participated in another questionnaire concerning the effect of staff training programs at partner institutions. 9.7% of respondents considered the effect to be "very obvious", 34.5% chose "comparatively obvious", 32.1% chose "not very obvious", 6.6% considered it "little obvious" and 17.1% chose "I don't know".

Figure 2. Administrative Staff's Viewpoint on Effect of Faculty Training Program of PA Project



It can be seen from the Figures 1 and 2 that both faculty and administrative staff gave similar assessments for the effects of the PA Project, with more than one-third reporting the effect being "comparatively obvious", the next one-third finding it "not very obvious" and less than 10% considering the effect "little obvious". The only slight difference is that the administrative staff had slightly higher percentages in choosing "very obvious", while both faculty and administrative staff groups had low percentages (just over 6%) of choosing "little obvious" . Hence, the questionnaire results indicated that the faculty's further study program had achieved a lot in improving the faculty quality in terms of teaching and research quality in assistance-receiving institutions. But on the other hand, the results also indicated that more attention needs to be paid to this kind of training program because still 20% of faculty of higher education institutions and 17% of administrative staff showed no awareness of this program. The biggest reason may lie in the insufficient publicity and limited funding for the program.

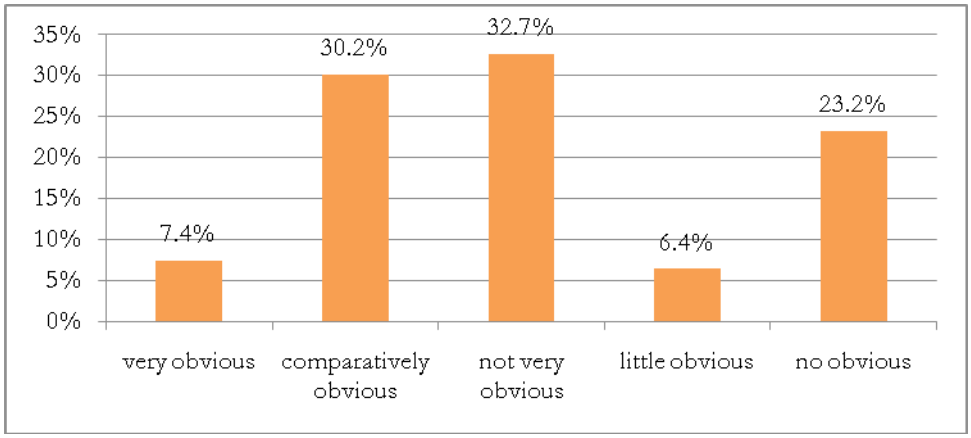
There has also been obvious improvement in administrative staff's managerial ability and their awareness and capability to provide services

The administrative staff in western universities have also broadened their vision and gained valuable experiences through learning how to better teach, conduct research and manage at high-level eastern universities in an intensive and extensive way.

Figures 3 and 4 reflect higher education institution teachers' and administrative staff's view of the effect of administrative staff training program respectively. Among all teachers who participated in the questionnaire investigation, 7.4% thought the effect of administrative staff training program was "very obvious", 30.2% considered

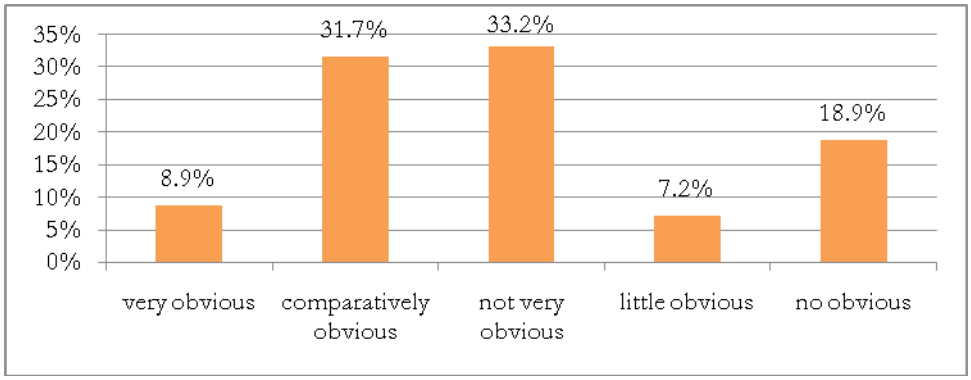
it "comparatively obvious", 32.7% chose "not very obvious", 6.4% found it to be "little obvious" and 23.2% chose "I don't know".

Figure 3. Higher Institution Teachers' Viewpoint on the Effect of Administrative Staff Training Program



On the other hand, among all administrative staff who participated in the investigation, 8.9% thought the effect of administrative staff training program was "very obvious", 31.7% found it to be "comparatively obvious", 33.2% chose "not very obvious", 7.2% considered it "little obvious" and 18.9% chose "I don't know".

Figure 4. Administrative Staff's Viewpoint on the Effect of Administrative Staff Training Program



From the two figures above, we know that approximately one-third of both teachers and administrative staff participating in the questionnaire inquiry considered the effect to be "comparatively obvious" and "not very obvious". As for "very obvious" and "little obvious" , the percentage of those choosing these two effects in both groups was low, but when compared, the percentage of administrative staff who chose these two effects was 6% higher than that of teachers. It seems that the administrative staff gained more obvious effects from the training program, which has helped them emancipate their minds, upgrade education philosophy and improve teaching, research and administrative capability. However, there remains 23.2% of higher institution teachers and 18.9% of administrative staff who chose "I don't know", which indicates that the publicity of the program needs improving.

In addition, taking a certain post in a partner university while retaining the post in the home university has been an important part of the partner assistance mechanism. In this way, leaders, cadres, faculty and staff have been able to update their philosophy and seize opportunities to actively make progress in management capability.

Discipline orientation has become more focused and lead to the improvement of faculty and staff quality and their research capability

Those who have been sent for further study or practice in a partner university are the key manpower of the assistance-receiving institutions. After taking part in the program, they gain a more thorough understanding of the theoretical edge in relative disciplines and the latest information in relative fields. Thus, they are more able to lead the teaching reform in the right direction after they come back to their home universities.

Digital Classroom Program

The launch of digital classroom program has produced a positive impact on the reform of teaching methods and improvement of teaching quality in the assistance-receiving institutions.

Students have benefited a great deal from the digitalization of classrooms

Digital classrooms with recording, editing and broadcasting functions can provide video and audio resources including teaching by outstanding experts. They have paved the way for a public platform for full-scale network education. For instance, Kashi Normal College has managed to provide students with simultaneous courses taught by the faculty at Central China Normal University with the help of digital classrooms and therefore it has achieved a low-cost share of high-quality educational resources for students to study and review.

Faculties have improved their skills in organizing and managing teaching from the digitalization of classrooms

Modern technology including the functions of digital classrooms, online live broadcasting, online program ordering and online interactions have boosted faculty's organizational and managerial skills. For instance, with the establishment of three digital classrooms, Xinjiang Arts University has met the demand for practical teaching of eight majors including musical performance, recording arts, animation design, and so on, so that students are provided with sound platforms for practices and innovation.

New ways for partner assistance have been explored

Modern information technology is able to help lower the costs and improve efficiency, therefore, the role it can play in enhancing partner assistance and promoting the sharing of all high-quality resources among higher education institutions is non-ignorable. For example, Lhasa Normal and Professional Training College has made full use of digital classrooms and jointly established the "Assessment Centre for College-Entrance Examination (Online)" with a Tibet examination institute. This center has improved the efficiency and fairness of marking exam papers by introducing electronic marking.

Educational resource kitchen has been enriched and more completed

Since digital classrooms are able to film and record live education contents, which is convenient for distant users, they are actually providing a very good platform for teacher-student interaction and self-learning. Northwest University as an example has achieved resource sharing with Nanjing University with the help of digital classrooms. These shared resources cover various disciplines of Nanjing University including 41 state-level outstanding courses, 66 provincial outstanding courses, 170 university outstanding courses, 291 teaching cases, 202 academic lectures, and 15 research-based teaching resources.

Experience and Problems of Partner Assistance (PA) Project

Over the past few years, programs under the Partner Assistance project have yielded significant results in educational development, disciplinary development, research collaboration, and campus culture development, which contribute to regionally coordinated higher education (Tsinghua Task Force, 2007). The experiences of implementing the PA project are as follows.

Experiences

In recent years, the PA Project has been continually developing and providing people with abundant practical experiences, which effectively promote the further development of higher education institutions in western regions.

Consistently focusing on strategic development goals

The Develop-the-West Strategy is the goal of the Party and the whole nation, with the promotion of higher education development in western regions as one significant part. Partner assistance is one particular and important part of western higher education development.

Making long-term efforts and focusing on implementation on the basis of a correct understanding of the project

Attention paid by the leaders is the premise for the smooth processing of the project, but a right understanding is also indispensible before the leaders start to pay attention. Higher education institutions have fully realized the significance of partner assistance and have made every concrete step in pushing it forward in a long-term and practical way.

Building close bonds between the universities in the west and their eastern partners in the spirit of selfless support and win-win results

The close bonds and relationships between eastern assistance-providing institutions and the western assistance-receiving partners stand as the core of the PA Project. On the one hand, the assistance provided to western institutions is the fundament of the project and a great number of selfless assisting actions sprung up in the implementation of the project. On the other hand, assistance-providing universities have also benefited from the whole process. It has been proved that the partner assistance project has also benefited the faculty of eastern universities in various aspects such as consolidating moral principles of faculty team, enhancing the service awareness of administrative staff, updating personnel development, promoting scientific research and improving service capability.

Forming a long-term mechanism with scientific management

Many assistance-providing and receiving universities have included partner assistance into their long-term planning schemes. Pairs of partners have been holding meetings every year for implementation of the project. The Ministry of Education has also published relative polices to provide overall guidance for partner assistance. It also holds conferences and seminars to promote communications and dialogues. These mechanisms do not only exist as effective practical results, but also are laying a foundation for future work.

Problems

Though we take pride in the experience and achievements mentioned above, there remain some difficulties and challenges in the way for the project. Three problems stand out as follows.

Limited Budget

Although the state has allocated special funding to the project, and both the assistance-providing and the assistance-receiving institutions have also put in a great number of resources and funding in the regard, the existing amount of funding remains far from enough as compared to what is really needed. The lack of funding is a bottleneck for PA Project, especially bringing about enormous challenges and pressure for western universities.

Inflexible faculty and staff training program

The result of PA Project questionnaires showed that in spite of the sound effects of faculty and staff training program, there exists the problem of inflexibility in this regard. In terms of the time of the program, on the one hand, the faculty's feedback shows that they hope to have longer term of study and training for a deepened study. On the other hand, the administrative staff hold that the training lasts too long to ensure the quality of the program, and this has also had a negative impact on their work at their home institutions. In terms of partner selecting, if partners never change, then a western institution may not have the opportunity to have broader sources of input in faculty and staff improvement, which may not be the best option for the institution's development. In addition, the scope of training is somewhat limited without specifically targeted training goals.

Inadequate technology support for digital classrooms

The biggest problem that digital classrooms are facing under the PA Project is the lack of adequate technology support. The linkages and transmission in the education network for distance education are not smooth enough. Due to a technology bottleneck, which also involves the great hardware gap between western institutions and their eastern partners, the sharing of high-quality education resources is limited.

Policy Implications for Partner Assistance (PA) Project

The PA Project has achieved remarkable advances in promoting the development of higher education institutions in western regions of China since it came into being. Under the new circumstances, in order to achieve a faster and healthier development of higher education in western China, certain policy implications specifically for the PA project are put forward.

Faculty and Staff Training Program

Based on the experiences from the past, all assistance-receiving higher education institutions have put forward suggestions on the ways to improve faculty quality, personnel quality, research ability and management ability during the twelfth Five-Year Plan from 2011 to 2015.

Faculty and administrative staff should be allowed to choose partner institutions

Institutions in the western part should be allowed to choose which university to have as their partner universities in the east so that the problem of narrow partner sources can be solved. It is suggested that the faculty and administrative staff at western universities apply for certain institutions at which they want to study or have their practical training. If the institutions they apply to accept their application, then the institutions will hand them admission notifications, and finally report to The Ministry of Education the real number of applicants to their institutions for study and practices.

The time length should be readjusted

The time length of further study for faculty should be properly lengthened, and the time for administrative staff to do practice should be more flexible. It is suggested that the teachers' training be lengthened to one year and the administrative staff training shortened to half a year without undermining the quality.

The contents of faculty training should involve a larger scope and be multi-dimensional

For the faculty with PhD degrees, the focus should be on improving their understanding of curricula and their teaching capability. Naturally, they should also participate more in research. For those who have master degrees and a relatively weak major background, they may select some courses at the PhD level to help refine the specific directions of their research. They should be allowed to study at national key laboratories in the related fields, or at the MOE humanities and social science research base, or the centers for post-doctoral studies. The participating groups can also be in a multi-layer division such as key discipline academic groups, key academic pacemakers, young academic faculty, and so on. The time for training should be arranged for two periods: 6 months and 12 months respectively.

More funding should be invested

It is suggested that the outlay for the faculty and training programs should be increased to cover the cost of study materials and fees for academic exchanges more on top of travel expenses and inspection costs.

Digital Classroom Program

In order to make better use of the functions of digital classrooms in western institutions and achieve high-quality resource sharing, itis suggested during the twelfth Five-Year Plan Period paying attention to following aspects:

More investments should be made in network infrastructure to improve network transmission

Real-time and synchronous transmission is a key part of digital classrooms for education interaction, but communication congestion caused by limited bandwidth is now the major problem that hinders tapping the functions of digital classrooms . The state should invest more in network infrastructure construction, especially in western regions.

More funding should be allocated for digital classrooms to get rid of technological challenge

Due to geographic and quality gaps between the assistance-providing and the assistance-receiving institutions, a technology-related bottleneck remains, which means the technology provided in classrooms of western institutions cannot meet the real demand for education. This challenge has exerted some negative impacts on resource sharing. Therefore, more investments should be put in practice and the Ministry of Education should lead in equipment procurement and achieving docking with eastern partner institutions.

Operation management should be strengthened

Partner institutions should coordinate their arrangements for educational interaction due to their different schemes to cultivate talents, different curricula designs, length of semesters, different course schedules and different teaching materials. In order for the digital classrooms to best contribute to the study programs, the two sides should strengthen coordination in live synchronous course offering.

The scope of resource sharing should be enlarged

Due to intellectual property rights and some other legal issues, it is still a long way to achieve an all-round opening and sharing of library resources, outstanding courses and power point presentations in all respects. So it is suggested that the MOE should play a key role in coordinating relative institutions and departments for enlarging the scope of resource sharing and upgrading the functions of digital classrooms.

In summary, it is worthwhile mentioning that the central government plays a leading role in the project. Further development of the PA project requires close collaboration among the governments, assistance-providing and assistance-receiving universities, which ought to adopt more practical and flexible methods to improve the efficiency and effectiveness of the current operational model.

References

Cen, Z.Z.& Li, Y. (2010). *Partner Assistance and Coordinated Development of Higher Education Institutions* (pp.300-341).Beijing, China: Higher Education Press.

China Education Daily.(2010). *For the Sound and Fast Development of Higher Education in Western Part of China.* Retrieved from
http://www.edu.cn/gao_jiao_news_367/20100226/t20100226_451154.shtml

China Education Daily. (2010). *Common Development of Tongji University and Jinggangshan University as Partner Institutions.* Retrieved fromhttp://paper.jyb.cn/zgjyb/html/2010-07/02/content_31744.htm

People's Republic of China, Ministry of Education. (2010). *Questionnaire for Higher Institution Undergraduate Teaching Quality and Reform Project (for higher education institutions' faculty).* Retrieved from http://www.sojump.com/jq/258977.aspx

People's Republic of China, Ministry of Education.(2001). *The Plan for Partner Assistance to Higher education institutions in Western Regions.* Retrieved from http://dkzy.shzu.edu.cn/structure/zcnr?infid=7

People's Republic of China, Ministry of Education. (2006). *The Opinions on Reinforcing Partner Assistance between the Eastern and Western Higher education institutions.* Retrieved from http://baike.baidu.com/view/3411607.htm

People's Republic of China, Ministry of Education.(2006).*Full-round Start of Partner Assistance to Xinjiang Autonomous Region.* Retrieved from http://news.sina.com.cn/c/edu/2006-06-24/10029287373s.shtml

People's Republic of China, Ministry of Education. (2007). *Summary of Work for Shaangxi Normal University's Partner Assistance to Qinghai Normal University.* Retrieved fromhttp://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/moe_744/200708/25948.html

People's Republic of China, Ministry of Education and Ministry of Finance. (2007). *The Opinions on Undergraduate Teaching Quality and Reform Project (Higher).* Retrieved from http://baike.baidu.com/view/2948771.htm

Shaanxi Normal University.(2008). *Four "Promotions" Made by Shaanxi Normal University to Provide Partner Assistance to Qinghai Normal University.* Retrieved from http://www.clner.com/Html/gaodengjiaoyu/yuanxiaoyanjiu/0114235.html.

The Central People's Government of People's Republic of China. (2009). *Remarkable Achievements in Project of Partner Assistance Project to Higher education institutions in Western Region by Ministry of Education. Retrieved fro*mhttp://www.gov.cn/gzdt/2009–12/03/content_1478949.htm

Tsinghua Task Force. (2007). East-West University Partnerships: Practice and Experience. *Research on Education Tsinghua University,28,34–43.*

Xinjiang University.(2010). *Learn from the Key University, Upgrade Education Philosophy, and Promote University Development.* Retrieved from http://www.dkzy.xju.edu.cn/a/xuexijiaoliu/2010/1101/101.html

Zhang, H.R., Cai, J., & Li, J. (2011). Empirical Analysis on Teachers' Training and Cadre's Practice in Counterpart Support by Colleges – Taking Counterpart Supporting Traim University by Huazhong Agricultural University for Example. *Journal of Huazhong Agricultural University(Social Sciences Edition),5,139–142.*

Chapter 14

The governance of university based on the university statute

Linqin Su & Jin Sun

Intoduction

Modern higher education institution such as a university requires an effective and efficient management and governance structure. In China this is regulated by the Higher Education Law (1998). Accordingly, a "Notice issued by the General Office of the State Council on Piloting the National Education System Reform" instructs universities and colleges to: "1. Promote the establishment and improvement of the University Statute; and 2.Optimize the internal governance structure of higher institutions"(Guobanfa, 2010). The University Statute is a mandatory, regulatory, legal document which forms the basis of the Charter of the university and it acts as the guiding document for the institution. It lays out the vision for the establishment of the university as well as its governance and management structure. The University Statute, as prescribed by tha law, assumes that there ought to be a close relationship between this legal document and its internal governance structure. However, the challenge for the modern Chinese university lies in being able to realise and implement effective internal governance as prescribed by Statute. This paper intends to examine and discuss various aspects of the University Statute to understand better this challenge. It will seek to do this by first examining the nature, efficacy and content of University Statute. It will then focus on the two main aims of Statute Adjustment: the allocation of academic power and administration power, and the protection of teacher's and student's right. Thereafter it will explore three core issues relating to the formulation of Statute: balancing the power between the principal

and the party committee, clarifying the role of professors in decision-making as part of university governance, and optimizing the power distribution on university and college Level. Finally it will draw conclusion that Statute should be used by university as imperative, constitutional and fundamental document for efficient university governance.

University statute: the "charter" of universities autonomy

According to the Third Constitution on "Interim Measures for Higher Education Institutions Charter Regulations" issued by the Ministry of Education (MOE, 2011), the University Statute outlines the fundamental pre-requisites for higher education institutions to follow in terms of their: a) regulated legal status, b) independent and autonomous management and c) effective public service function. This paper will attempt to illustrate how the University Statute can facilitate the autonomous and effective management of a university.

The nature of university statute

This section will discuss the nature of the University Statute, relevant provisions of the Higher Education Law (1998) and their implication on higher education institutions. *The Higher Education Law* (1998) specified that the University Statute is a compulsory document for all universities. Article 27 states that any entity applying for permission to establish a higher institution must submit to the authorities relevant documentation relating to the University Statute. Despite this statutory requirement, the current situation is that, the majority of higher education institutions have not completed the formulation or submitted their Statute as required by the law. According to a survey conducted in 2007 by the Legal Office of the Ministry of Education, only 21% of the 300 registered higher education institutions in China had Statutes (Wang, 2011, p.16). More disturbingly is that most public-funded universities operate without any Statute, and where one is evident, it is ignored or loop holed. Some possible conclusions that may be drawn from this scenario is that institutions of higher education have i) deliberately not acknowledged that Statutes are their guiding, legal "Charter" documents out of fear of having their powers curtailed and ii) been accustomed to operating without the Statute document and have thus chosen to overlook it altogether because it is perceived as redundant.

The *Higher Education Law* became effective on January 1st, 1999 and is considered to be the most authoritative document relating to the University Statute as it sets out in detail the various requirements and obligations on higher education institutions. Article 28 stipulates that "the statute should include a. The university name and address; b. The university vision and mission; c. the university size; d. the way different disciplines are organized; e. the manner in which students are taught f. the internal management structure; g. funding sources; land/property ownership and financial systems implemented; h. the rights and obligations of the founder and the university board; i. modification procedure of the statute and j. other items stipulated by the statute (MOE, 1998)". Article 29 stipulates that the modification of the Statute should be inspected and approved by the same body which originally authorized it . Although there has been much debate and emphasis placed on the importance of the University Statute's content and modification process, Article 29 in reality neither articulates the supreme position of the Statute in the management of the university nor does it specify the important role it should play in the daily operational, management and governance of the university. This ambiguity arguably contributes, to some extent, to the blurred lines between the Statute's statutory legal nature on the one hand and its operational role on the other hand, within universities and institutions of higher education.

The establishment and development of universities in other countries especially in Europe indicate that the University Statute can play various roles. On the one hand it is the "constitutional" and foundational document for the establishment of a university as a legal body and on the other hand it is also the guiding document, in that it establishes its Charter (Pan and Lin, 2010, p.45). It may also act as a link between the national laws of the land and the universities' internal self-regulation systems. Consequently, the University Statute is not only a self-regulatory document which assists in standardizing the management of different departments as well as faculty and employees, but it can also serve as an important consultative and guiding document if and when a university is called upon or required to conform with statutory regulatory bodies, in particular, administrative authorities, both at a national and local level. Most importantly, the Statute can act as an important reference document in a litigious or contentious situation between for instance external funders and university operators, or the university board and teachers/students (Jiao and Liu, 2010,p.44). This is because the Statute sets out explicitly the university's precise legal nature and this acts as a prerequisite to its autonomous "Charter" status. Thus, without the Statute document (and the Charter) it would be difficult for the university to ensure that its operations remained autonomous and independent in accordance with its foundational and constitutional principles

(which are detailed in the Statute document). Having discussed the nature of the Statute the next section will examine the pre-requisites to its efficacy.

The efficacy of university statute

According to Sun and Zhu (1999, p.287; p.288), the effectiveness of any law or regulation depends on its formulating organization and procedure, rather than its specified contents . The "Charter" status of any university Statute should not only be confirmed through legislation, but also more importantly, through its formulating body and procedures. Thus, the efficacy of the Statute maybe derived either from legal statutory or regulatory powers (e.g. *the Education Law* and *the Higher Education Law*), or from the authority of the formulating body (e.g. authorities with legislative power such as the People's Congress) The former bestows on the Statute legal authority by virtue of the fact that it has been legislated while the latter gives the Statute the authority of a mandatory, binding legal document by virtue of the fact that it is granted through the public (private) legal power of the formulating body. At the present time in China (2012), the situation for higher education institutions appears to indicate that the efficacy of the Statute relies primarily on the authorization of statutory regulatory laws such as *the Education Law (1995)* and *the Higher Education Law (1998).* To date, neither of these two Acts of law have clarified properly that the Statute has legal force as explained above. The consequence of this is that generally speaking universities are not motivated to establish a Statute, and/ or comply with it, and/ or refer to it as a fundamental, binding, legal, constitutional document . Worse still, even when there is a Statute in place, there is ambiguity and lack of clarity with regard to the rights and obligations of the funder (in most cases the central and local governments), the university operational body (the university board) and the public. Furthermore, there is also in most instances, no mention in the Statute as to the consequence of violating provisions of the Statute or remedies available . The lack of clarity on many issues, has resulted in *interalia* the following:

a) the Statute having no appeal to universities generally and being regarded only as a statutory formality
b) the Statute being unable to act as an autonomous, guiding and legally binding constitutional document which could regulate the rights and obligations as well as balance the power play between various stake holders ie funders and managers/governors
c) the Statute being unable to safeguard the independent operational rights of universities.

All of the above have compromised the efficacy of the Statute.

One further issue regarding the efficacy of the Statute needs to be mentioned. This is in relation to which body has the rights to determine the content in the formulation of the Statute. This is complicated because arguably the *formulating body* has the right to decide the content as well as the efficacy of the statute and this has direct consequences on the internal governance structure of universities. This begs the question as to who is the formulating body? *The Temporary Measure for Formulating University Statute* issued by the Ministry of Education only vaguely defined the meaning of formulating body (MOE, 2011). Article 16 stated that the members of the formulating body should include representatives from different stakeholder groups, i.e. the funder, the faculty, the students and the administrative staff. However, it fails to clarify in what proportion the representation should appear and there is no unanimous, universal standard on this proportion and it varies from one institution to another. For instance, of the thirty universities who have established their Statutes, fifty per cent formulated and established the Statute with the Faculty Assembly as the formulating body; while thirty five per cent relied on their University Party Congress as the formulating body . This clearly illustrates that the formulating bodies of the Statute are not consistent and vary across different universities. It is thus recommended that a clear and precise guideline with universal standards be prescribed which should be followed by all universities. The prescription should also include and clarify to who/what the formulating body ought to be, together with details as to the specific proportional representation of each stakeholder. This will ensure consistency and transparency in the establishment of the Statute.

The final issue with regard to the formulation of the Statute is that there is usually little or no participation from the funders of universities (usually the central and local governments) . In most cases it is only the stakeholders within the universities (e.g., the school board, faculty and students) who draft, debate, discuss and approve the Statute. There is little or no intervention from the government and/or education authority. The consequence of this is that because it lacks government involvement, there is a perception that the Statute lacks authority and/or is a legally binding document and this considerably reduces its efficacy.

Therefore, to ensure the legal authority of the Statute, it is recommended that: a) the definition and proportional composition of the formulating body be urgently clarified by legislation and b) universities be granted with formal, legal rights granting them authority to formulate their own Statute (Chen, 2010, p.27). This would standardize the formulation procedural process and also heighten the stature of the formulating body as it would be seen to be recognized and authorized by the government. This is critical, because based on the experience of universities in the United States, one the Statute is passed and authorized in a State Congress meeting,

it automatically becomes law (ie. part of state legislation) and this ensures its legal authority and efficacy.. In the US, the draftsmen, the procedures to be followed as well as the representation and number of voters to can formulate the university Statute are clearly stipulated in policy documents. In some states, Statutes (particularly in public universities) even refer to specific clauses of the national Educational Acts and laws and this has the effect of lending further authority to the Statute as it can be said to be rooted in national policy (Chen and Tao, 2009, p.60).

When compared to the US, the process of formulating the Statute in Chinese universities is less rigorous, as is the efficiency of the national, legal system. The situation aggravated by the transitional and unpredictable nature of the governors and managers of some universities who, modify clauses and provisions in the Statute on a whim (Lu, 2009,p.41). This, undermines the authority of the Statute, which relies and seeks to maintain its "Charter" status from its fundamental, constitutional quality ie that the Statute has the unique feature of being a stable, unchanging and guiding document when compared with other regulations within the university which are changeable. All of these features of the Chinese university system i.e. a) the lack of rigour in the formulating of the Statute b) the less efficient Chinese legal system c) the whimsical personalities of heads of universities and finally d) the lack of proper provisions in the Statute itself which detail how modifications ought to be carried out, all contribute to mitigating the authority of the university Statute.

Content of the university statute

Having examined the efficacy of the University Statute and what factors contribute to undermining its authority this section will look at its content. The formulation of the university Statute is expected to be guided by the *Higher Education Law (1998)*. However, close examination of the Statutes of several universities reveals that many universities appear to simply adapt the wording of the Higher Education Law as provisions of the Statute without being discriminating. For instance, the Statute of Jilin University illustrates this clearly. In its Statute, Article 8 states that the university should carry out teaching, scientific research and social services centering round training talents and knowledge innovation); Article 9 stipulates that the university shall work out schemes for admission in accordance with the requirements and demand of society and conditions for running the institution; and Article 10 provides that the university shall set up areas of disciplines and specialties in accordance with laws.

Interestingly, these are adapted verbatim from Article 31, Article 32 and Article 33 of *Higher Education Law (1998)*, respectively without any modification.

Generally speaking the *Higher Education Law* (1998) is a strategic all-encompassing document. It aims to make provisions for all dimensions of higher education and act as a harmonizing synthesizing and standardizing document to navigate across the commonalities of all the different Chinese universities. It is thus, by its very nature, arguably, a more theoretical and abstract, rather than an operational or implementable document. In practice, it would be ideal if (as a subordinate document of the Higher Education Law) the university Statute were to adapt its spirit and modify its letter according to each specific university. In other words, the Higher Education Law should not be accepted verbatim but the clauses and provisions ought to be tailored and customized to inform the needs of each individual university. In this way, the Statute can be an implementable, practical and individually-tailored guiding document to the suit the specific circumstances of each university. Simple verbatim adaptation of the *Higher Education Law* without thinking about the universities' needs, serves to reduce the Statute to a mere formality and does not inspire stakeholder confidence.

In summary, it is fundamental that the Statute should *interalia*

a) reflect the vision, mission and values of the (particular) university;
b) include in detail, the structure and standards for management and governance so that the university can operate autonomously and efficiently;
c) balance the power and differing agenda interests of various stakeholders;
d) act as a guiding document which can help mediate between stakeholders in situations of conflict;
f) help identify areas of common stakeholder importance and interest which would assist in the attainment of the vision of the university;
g) include a provision for how modifications or amendments would occur;
h) be just, fair and reasonable – ie should state and uphold explicitly the rights of governors, managers, faculty and students so that it is a document that is revered and respected by all and referred to as constitutional, foundational and binding;
i) carry *interalia* a provision for incentives and punishments for when the Statute is upheld and violated. As one university principal puts it, "if the Chinese universities want to operate on their own way, they need to lay down their individualized statute, which not only prescribes how to manage the university, but also the punishments when violation of the statute occurs. In this way, everyone on campus will develop a reverent awe towards the statute" (Ma, 2009, December 22).

The above are just a few of the broad provisional requirements of a university Statute which can assist in the effective and efficient operations of the university. The next section examines in more detail the powers and rights allocations in the Statute, which is more complex than it appears to be at face value.

Power and right allocation: statute adjustmen

The preceding paragraphs detailed some of the inherent challenges of the Statute in Chinese universities which make it difficult for them to operate autonomously. Arguably, if a university aims to achieve a level of independence and self-governance based on its constitution, (i.e. its Statute), there needs to be clear boundaries established so that the balance of power and the rights and obligations of different stakeholders (Gong, 2010, p.49-55) allow optimum efficiency. This is the aim of Statute adjustment. Statute adjustment (or amendments to the provisions of the Statute) occurs when there is a need to revisit and rebalance the exertion of any excess power and guarantee and uphold the rights of all stakeholders in the university community (Flexner, 2001). To be more specific, Statute adjustment aims to guarantee that executive arm/leadership of the university do not abuse their powers (e.g. nepotism) and at the same time promote and regulate the rights and obligations of faculty and students in accordance with the Statute, so that the environment at the university is at an optimum for teaching and learning. The next section explores the notion of power and right within a university context more thoroughly.

Academic power and administration power

The operation and oversight of a university are maintained by powerful forces which are both administrative and academic. The academic power or authority can be defined as one that is an intrinsic, driving force within the university body, to pursue knowledge and truth . According to Gong (2010, p.49-55), the internal governance mechanism of a university includes a decision-making structure which is generally based on *academic* power, who aim to:

a) respond to and balance the various public interest groups within the university by mediating between their "conflicts and multi-interests"

b) ensure that decision making authority is not centralized within a few powerful people (Zhou, 2005,p.199)
c) emancipate and promote academic forces and creativity
d) activate different ideologies and new areas of learning.

Indeed, the academic powers of a university play a critical function in nurturing faculty and student talents, encouraging innovation in research and facilitating and providing an environment where learning and teaching can flourish. It is thus imperative that the university has a sound foundation and a solid institutional environment which can allow these academic powers to be most productive. One way to do this is through the university Statute. The next section will explore some recommendations on how this can be achieved.

The Statute provides universities with an opportunity to reform their structures. It can facilitate the separation of powers into academic affairs and administration matters, i.e. the clear demarcation between academic and administrative power would allow for the university to function more effectively. It is important to note that Statute regulations are not simple arrangements of administration power in the university, neither are they strategies for decentralizing or devolving power from a person to a group or organization. Rather, they denote the specifics of power allocation between different stakeholder groups i.e. that of the government, university managers, governors, the academic body (faculty and students) and the public at large. Because the Statute can provide for all of these particulars, it can prescribe how, to what extent, and within which realms of power each stakeholder should operate. Indeed, it can even specify under which circumstances the government and/or the public could intervene in the operations of the university. The Statute can also, at the same time, make provisions as to how the university can keep its autonomy, regulate itself and maintain its independence while responding critically to evolving societal knowledge needs and requirements (Flexner, 2001). The Statute thus has potential to play an important role in managing the various stakeholder interests in the university.

However, this begs the question, what protection is available to the academic powers, from an overly powerful administrative arm which has the potential to curtail them? Arguably, academic powers need to enjoy priority over administrative powers because they are the driving force of creativity within the university. In such a situation, the Statute should provide for adequate rules and regulations which would assist the administrative powers to coordinate the university's daily operations. According to Zhang (2004,p.39), if the legal authority of the Statute would effectively regulate the behavior of the administrative powers, they would be unable to overstep

their boundaries, and would be likely to manage university administrative affairs with great caution. This would allow the academic power to enjoy relative freedom to progress. While this is true on the one hand, it must be noted that in reality the administrative powers of the university are those who uphold and implement the university's autonomy rather than the academic staff. This is a paradox because, rather than the administrative powers and operational managers of the university, it ought to be the academic staff who are independent and autonomous. To clarify, the ultimate purpose of the administration and management powers is to ensure the smooth running of the academic activities, while the main aim of the academic powers is to stimulate knowledge creativity and innovation. Thus there is a critical balance that needs to be created and maintained between the two forces which can be done through the workings of internal governance of the academic power and new ways to participate in administrative decision-making. Having explored the two different bodies of power, the next section examines the area of rights within the context of a university.

Protecting the teacher's and student's rights through statute

It is assumed that the university is being governed by values of rationality and spirit of humanity which are enshrined in the Statute (Qin, 2011,p.67). Following from this, the Statute should recognize and promote the rights of teachers and students who are the bedrock of the institution. Indeed, it is fundamental that the Statute, from the outset, guarantees the rights of teachers (within the university community and campus) to enjoy the freedom to conduct research, debate, discuss, discourse, publish and lecture on any subject which they perceive to be a truth (Jin, 2000,p.172-173). This freedom, ideally, must not be curtailed, controlled or intruded upon by any administrative "authority" or any "fixed rules" with the proviso that it does not violate the guild regulation in the academic field. The Statute must articulate clearly the legal relationship which is established between students and teachers in a university environment (based on the *Higher Education Law)* to ensure that student rights are recognized and upheld (Zhou, 2005,p.199). In this way the Statute can reconcile the mutual (and possibly conflicting) interests of both students and teachers (as well as different stakeholders) within the university community. Indeed it can be an authoritative referee and guiding document for helping to resolve conflicts on campus.

Research on recent lawsuits where teachers or students have sued their universities for infringing their rights reveals that litigation was the last and only option for

them to defend their rights. This, to some extent, reflects the necessity for the Statute of university to provide in detail what the rights and obligations of both teachers and students are. The Statute should also clarify what administrative procedures are available to help students and teachers realize their rights as well as what remedies are available if these are infringed. This would facilitate a better awareness of rights and possibly avoid matters reaching litigation in court.

A few further points need to be mentioned in terms of protecting the rights of students. The Statute must cover the following student rights in order to be effective: 1.substantial rights; 2. procedural rights and 3.the appeal mechanism if rights have been violated. More specifically, the rights of students include the freedom to study, to use facilities on campus, to win scholarships, to receive punishments if they go against campus rules, to receive a fair evaluation and thereafter a graduation certificate, to participate in campus affairs and social issues and to receive grants and subsidies, etc. (Yao, 2005,p.103). Of all these, the most important are the right to appeal and to the right to obtain support and subsidies because these two, arguably, can guarantee a students' continuation at university on a financial and emotional level. In order that students are able to realize their rights especially these two which have been highlighted here, it is suggested that the Statute provide for a panel, (which operates under the guidance of the Statute), to deal with cases where students' rights have been violated. This illustration thus shows how the Statute can bring a balance of power between teachers and students, uphold and promote their rights as well as provide for remedies. Having examined the rights issues within the context of the Statute, the next section will explore how a Statute is currently formulated. It also makes recommendations on how this process can be improved.

Formulation of the statute

In Chinese universities, according to Yao and Huang (2009,p.107), the aim of a university Statutes is not just for the sake of writing it down, but rather to promote the establishment of a modern university system and to enhance the realization of public governance in higher education. After all, the aim of university governance is to design better institutions and allocate powers in a reasonable balanced way so that the three social functions of a university – nurturing talents, conducting social research and serving the public – can be fully realized. These aims can be achieved, as explained in this article, through an even distribution of power as stipulated in the Statute, not only between the university and the government, but also, between

the universities and colleges and students and teachers. All of these factors need to be borne in mind when formulating the Statute.

Thus, those at the university involved in the formulation of the Statute, should consider not only consolidating those rules which have sustained the test of time and proven to be effective in governing the university, but they should also take the opportunity to be innovative in suggesting adjustments to the governance and management structure to modernize it and make it more effective. Indeed, arguably, only when there are initiatives which challenge the status quo and push for new models of management can the Statute facilitate to create well-functioned managerial structure (Pan and Lin,2010,p.46) and clear up the existing situation where administration and academic affairs are intertwined, which hampers the emancipation of academic powers and further, the long-term development of the university. Furthermore, the Statute can delineate a clearer accountability system where different stakeholders are responsible for specific areas in the university and are thus obliged to perform their duties transparently and competently (Su, 2011,p.214).

In China, the current managerial structure of the universities includes the party committee, the principal, the university administration committee, the academic committee and staff congress. If the university is to be managed as provided by the Statute, the Statute must clearly specify how these various stakeholders should operate and interact. These issues must be discussed in detail at the time of formulation. The next section examines three suggestions relating to the management of the above stakeholders.

Balancing the power between the principal and the party committee

Although the *Higher Education Law* (1998) has prescribed that the university should be led by the party committee while principals should be responsible for its daily operation, it does not mention

a) how to balance the power between these two stakeholders,
b) what should be done if principals fail to follow instructions from the committee,
c) how principals could better interact with the academic committees lead by the professors?

Arguably, unless the Statute properly addresses the above issues, subordinate departments could feel confused about following and carrying out orders. This leads to weak accountability within the university and poor coordination between different departments. If on the other hand, the relation between the principal and

the party committee has been clarified in the Statute, then there is clarity about how to govern the university because the rules and standards are self- evident and non-negotiable (Wang, 2011,January, 3).

The role of professors in decision-making as part of university governance

Traditionally, there are few channels available for professors to participate in the governance of the university in China. This is due to the weak power of the academic committee to which professors generally belong. There is a widespread feeling that the time has come for professors to have a louder voice and be able to express their opinion and the Statute is one strategy that may enable them to do this. The Statute would enable the following: increasing the proportion representation of the professors on the academic committees, determining who are Communist members in the party committee, empowering the academic committee to have greater say in the major decisions of the university, and reducing the amount of administrative work done by the academic committee so that it can focus more on research and teaching. Of course, enhancing the professors' decision-making powers does not automatically mean giving them an open door to make all decisions (Zhang, 2004,p.39). Instead, the Statute should set limits to their powers and stipulate exactly in what decisions and to what extent they should be involved (John, 1998,p.32).

Another channel where professors' decision making can be strengthened is through the Faculty Assembly. According to Clause 43 of the *Higher Education Law (1998)*, all university faculty and staff enjoy the right of supervising both the academic and administrative power through participating in the Staff Congress. However, in reality, the Congress is not effective because it fails to a) represent the entire faculty and b) coordinate the interests of different sides, and thus the role of the Congress is reduced to a mere formality. Therefore, in order to better reconcile different stakeholders within a university, the role of Staff Congress should be stressed by the Statute (Qin, 2011, p.67).

Dual-level governance model of university

In the aspect of the power division model in internal governance structure of Chinese universities, the dual structure determines the power separation structure of universities. The dual structure can be interpreted from horizontal and vertical

directions. The horizontal power separation refers to the separation of academic units and administrative units. The vertical power separation refers to power separation between the university and schools (Yao, 2005,p.71). In Chinese universitis schools have little power in the university's decision-making process even though they undertake a huge responsibility in conducting research and nurturing talents. The uneven distribution of power gives the schools low incentives to participate in the university's self-governance. So it is recommended that the distribution of power between the university and the schools be redressed. The power should be distributed evenly between these two stakeholders in proportion to the specific responsibility of each (in this case, the schools undertake a very responsible role with very little power). At the same time, the governance of the university should start from the self-governance of schools, which are the basic units of both administration and academic affairs. Therefore, setting up an accountable and loss-compensation system should be a priority on the Statute agenda so that an effective and modern managerial structure which starts from the basic unit (in this case, the schools) could be established.

Conclusions

This article sought to examine various issues around the Statute document which is the fundamental Charter document of Chinese universities. The literature review revealed that many Chinese universities have not recognized the importance of this document and have also not appreciated that each Statute needs to be specific to each university. The formulation of a legally effective, authoritative and respected Statute could serve to *interalia* redress imbalances of power, protects and upholds the interests and rights of different stakeholders. It is apparent that in order to establish an efficient system for university governance, the importance of University Statute should be acknowledged by different stakeholders of university as an imperative, constitutional and fundamental document.

Reference

Chen, L. (2010). A Research of the Legal Process of Constructing University Statute in Chinese Public-Funded Universities. Master Thesis: Yangzhou University. P.27.

Chen, L. and Tao, Z. (2009). An analysis of characteristics of American university statutes. *China Higher Education*. (9): 60.

Flexner, A. (2001). Universities: American, English, German. Hangzhou: Zhejiang Education Press.

Gong, Y. (2010). University governance structure: Striking a balance in power changes in universities: From theory to policy actions. *Higher Education Research*. (12): 49-55.

Guobanfa (2010) No. 48. The Notice of the General Office of the State Council on Piloting the National Education System Reform [EB/OL]. Accessed on the 5th January 2013 at the website of the Central Government of the P. R. China, from http://www.gov.cn/zwgk/2011-01/12/content_1783332.htm.

Jiao, Z. and Liu, R. (2010). The framework of university statute in Chinese public-funded universities. *China Higher Education*, (24):44.

Jin, Y. (2000). The ideology of universities. Beijing: SDX Joint Publishing Company. P172-173.

John S. B. (1998). On the Philosophy of Higher Education. (Wang, et, al. translation). Hangzhou: Zhejiang Education Press. P.32.

Lu, J. (2009).The legitimacy of the form of university statute. *Modern Education Management.* (9):41.

Lu, J. (2010). The substantive legitimacy of university statute. *China Higher Education Research*. (6):24.

Ma, G. (2009). The administration of education system: A cause for declining academic creativity. *The Economic Observer*. 2009-12-22.

Pan, Y and Lin, H. (2010). University statute: System guarantee for constructing harmonious universities. *University Education Science*. (1):46.

Pan, Y. and Lin, H. (2010). University statute: The system guarantee for constructing the harmonious universities. *University Education Science*, (1):45.

Su, K. (2011). An analysis of formulating and improving Chinese university statute. *Law and Society*, (1):214.

Sun, G. and Zhu. J. (1999). *Jurisprudence*. Beijing: China Renmin University Press. P.287-288.

Wang, D. (2011). The status and routes of university statute construction in Chinese university. *China Higher Education*, (9):16.

Wang, R. (2011). Why are university statutes missed? China Education Daily. 2011-01-03, Version 6.

Yao, J. (2005). University Legal Construction During the Transit Period: A Research on Formulating Chinese University Laws. Doctoral Thesis. Beijing: China University of Political Science and Law. P. 103.

Yao, J. (2005). University Legal Construction during the Transit Period: A Research on Formulating Chinese University Laws. Doctoral Thesis. Beijing: China University of Political Science and Law. P.71.

Yao, Y and Huang, J. (2009). An analysis of status of Chinese university statute. *University Education Science*, (1):107.

Zhang, W. (2004). The Logic of Universities. Beijing: Peking University Press. P. 39.

Zhou, G. (2005). Education and Law: The Reform of Education Relations in China. Beijing: Social Sciences Academic Press. P. 199.
MOE. (2011). "Interim Measures for Higher Education Institutions Charter Regulations". Accessed on 5th January 2013 at the Chinese Ministry of Education website: http://www.moe.gov.cn/publicfiles/business/htmlfiles/moe/moe_420/201201/129181.html
MOE. (1998). "The Higher Education Law". Accessed on 5th January 2012 at the Chinese Ministry of Education website:
http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/moe_619/200407/1311.html

Chapter 15

Transformation of academic grass-root organizations' governance system in Chinese universities – A case-based analysis

Zhanrui Wang

Background

Since 1949, under the influences of *the planning system*, *work unit system* and *bureaucratic system*, the form and structure of academic grass-root organizations of Chinese universities have undergone several reforms (Zheng & Wang, 2009), however, their governance system has only shown little changes. The launch of all those systems was reasonable given the background of that time, but many of them have now turned out to be an obstacle in the development of the universities' academic productivity.

"Top-heavy"

Universities are often referred to as "*bottom-heavy*" academic organizations, but that is not the case in China where responsibilities are shouldered by faculties at the grass-root level but powers are centralized in high offices. In other words, the power allocation within China's universities reveals an "*inverted pyramid*" pattern of being "*top-heavy*" and "*over empowered at the top*". The severe imparity between the rights and responsibilities results in a lack of due autonomy of academic grass-root organizations in enrolling students and allocating human, financial and material resources, thus imposing negative impacts on the initiative and enthusiasm of faculties in teaching, research and innovating.

Faculty's marginalization in academic decision-making process

The traditional modes of power allocation within the academic grass-root organizations of Chinese universities fall generally within two categories. In the first one the party or administrative leaders of academic grass-root organizations have the final say, i.e., "*what they say or write counts*". The other one includes two kinds of decision-making mechanisms, i.e., the "*joint conference of the Party and the Administration*" responsible for administrative affairs and the several committees (academic committee, degree committee and teaching steering committee, etc.) for academic affairs, but the main actors in those small-scale committees are still represented by the leading party officials and administrators. While such a collective decision-making system is a big step forward as compared with the former practice, it still ignores or even rejects the *co-determination* of teaching and research staff. Some universities have established *committees of professors*, but such universities are very few in general. The academic decision-making power of university teachers at the grass-root level, especially of those without any administrative capacities (no matter whether they are professors), is rather limited or a mere formality.

The strong and dominant administrative power has strengthened the traditional *official-cored culture*, exerting extremely negative impacts on the academic development of grass-root organizations. On the one hand, it enables the outstanding academic personnel to "shift" from teaching and researching capacity to the administrative one. Some talented teachers, after having achieved certain academic attainments, stop their professional development, and shift their attention to the administrative capacities, in an attempt to "follow an official career after excelling in scholarship". The administrative posts in universities which should be, in its original sense, serving academic undertakings are, however, considered as "*official posts*". Teachers, who once become administrators, not only fail to infiltrate the academic culture into administrative culture, but also further indulge the bureaucracy and hierarchy within universities. The so-called "*officials in charge of the education*" continue to utilize the academic resources, but pay insufficient efforts to academic tasks. On the other hand, under the influences of the absolutely dominant official-cored culture, a lot of people in the gathering place of university teachers, namely, the academic grass-root organizations, dream to be "*officials*". In order to cater to their superiors who have decisive powers over their official careers, the intellectuals sometimes have to do such vexing things like fawning on superiors or disparaging colleagues. Therefore, the interpersonal relationships within the academic grass-root organizations become really subtle and complicated, where academic contention is replaced with open strife and veiled struggle, some scholars lose their academic

pursuits, thus such phenomena as cheating and corruption appear that cause shame to the academic community. In a word, the dominant administrative power corrupts the academic culture of universities and weakens teachers' passions in academic innovation, resulting in severe internal frictions of intellectual resources within the academic grass-root organizations represented by teachers in universities. It is the "*opportunity costs*" brought by such systems and their implications that lead to the reality where universities cannot nurture innovative talents or develop innovative scientific findings.

Closed and ossified management over personnel, assets and properties

A work unit is not only a work place for social members to carry out production, but also a welfare organization through which the members can rely on the state. All-in-one combination of functions, immobility of resources and non-contractual relationships among key factors of production are the inherent features of the system of work unit (Yang & Zhou, 2002). Enterprises, government-sponsored institutions and governmental agencies are no exceptions.

For a long time, all public universities in China have existed as government-sponsored institutions. In such a context, governance over academic grass-root organizations is deeply influenced by the logic of the work-unit system, i.e., one is personally affiliated to the institution where he work. In those universities, when setting up such academic grass-root organizations as departments or research institutes, the priorities should be given to the authorized size thereof. Teaching staff and researchers with budgeted posts are dependent on the academic grass-root organizations to a certain degree and can only carry out inter-institutional/departmental cooperation with prior approval from the person in charge of the grass-root organizations. The apparatus and equipments purchased by grass-root organizations for the purposes of teaching and research are generally for the use of internal members only and are not to be shared with other departments or schools. Also, for a long time, there has been a lack of genuine and equal contractual relationship between the teaching staff and researchers (as the owners of human capitals) and the universities to which they belong. On one hand, a university cannot dismiss a teacher at will who think it's not proper for it; On the other hand, a teacher's normal resignation or transfer is always baffled by the university he or she belongs to. In recent years, the power of academic grass-root organizations as administrative and welfare organizations

has been weakened. To improve the situation the normal mobility of teaching staff and researchers should be ensured and promoted through the teacher appointment system and sharing of large apparatus and equipment among academic grass-root organizations. However, due to long standing malpractices, the system of work unit is still exerting negative impacts in an extensive way. Problems arising from the logics of the work unit, such as a low degree of freedom, poor mobility and insufficient resource-sharing of/among teaching staff and researchers, are still assailing the operation and development of the academic grass-root organizations of Chinese universities.

Conceptual framework

Located at the bottom of the vertical structure of universities, academic grass-root organizations are formal organizations dealing directly with the advanced learning and basic units for academic production (Zheng & Wang, 2009, p. 21). They shoulder in a direct way the great responsibilities of cultivating students, carrying out scientific researche and serving the society and are therefore determinants of the quality of education, academic reputation and contributions to the society. Theoretically, the academic productivity of a university is merely a byword for the overall academic productivity of its academic grass-root organizations. The academic productivity of an academic grass-root organization is, however, a dependent variable vulnerable to the impacts of all sorts of technical and institutional variables, wherein the governance system is an important independent variable affecting the academic productivity of the academic grass-root organization.

The governance system of the academic grass-root organizations mentioned in this paper refers to the mode of power allocation among various actors and mechanisms dealing with their interrelationship. The transition of the governing power to the academic grass-root organizations is in its very essence an institutional change. It is not only an adjustment to the existing governance structure and mechanism, but also a reallocation of interests among relevant actors.

Burton Clark (1983, p11) described that for as long as higher education has been formally organized, it has been a social structure for the control of advanced knowledge. Knowledge is the core of academic grass-root organizations, although it is not always at the core during the process of decision making. People in the university sometimes think that they are the core of academic decision making, especially those who have power to decide. Thus, the interests of decision makers

instead of knowledge development invade the round table in the meeting room under the name of university or knowledge development.

The relation between the organization of people and the organization of knowledge matters (Burton Clark, 1983, p23). Only when the rationale of organization of knowledge is respected, and that of the organization of people serves well its operation rather than overwhelms it, the academic grass-root organizations can be a hotbed of creation and innovation. The governance problems in Chinese universities have originated from the unsuccessful relationship between the organization of people and the organization of knowledge, i.e., the relationship between leadership at the university-level and grass-root level, the academics and the administrators, and the belongings of the actors in the grass-root unit.

Chinese universities experienced two reforms at grass-root level since 1980s. During the first reform, the teaching-methods-research units were replaced by departments and institutes, and the former departments were replaced by colleges or schools. Knowledge integration was the main objective of this reform, along with the identities of academic staffs: formerly they were organized in the so-called teaching-methods-research units, now they belong to departments or institutes. However, the relationship between the university and the grass-root organizations, the academics and the administrators, and the belongings of the actors in the grass-root unit have not changed. The unmatched relationship of the organization of people and knowledge caused many problems, including the above mentioned governance system.

Since mid 1990s, the Chinese government started to invest in constructing the high level and then the world leading universities (so called Project "211" and Project "985"). Many Chinese universities believe that a world leading university or high level university must be a research university, or at least a university paying much attention to research. They think they must reinforce their research capacity, therefore the governance system of the academic grass-root organizations not adaptable to the demands of research capacity improvement must be reformed. This composed the targets of the second reform since late 1990s, i. e., to reconstruct the governance system and empower the academic grass-root organizations, to make them more open, autonomous, and flexible. "Govern the knowledge organizations as they should be governed" – is the main implicit idea of this reform. As for the policy orientation of the reform or transformation, the universities involved in this process all choose to shift their governance system "from close to open", "from dominated by administrative power to academic power", and "from bureaucratic management to autonomy". Yet, the concrete measures they have taken are dramatically different.

Models of transformation: case study

Although all Chinese universities joined the first reform of academic grass-root organizations, not all of them have joined the second one. The main actors of this on-going transformation are some "985 Project" universities and local universities who are interested in the reform. The models of transformation are also not very diverse. In summary, we can sort them by three models as "giant faculty system", "special area" and "overall transformation". The first one can be typically exampled by the creation of the Faculty of Education, Beijing Normal University, the second is represented by the platforms of scientific and technological innovation or research bases of human and social science deployed by some "985 Project" universities, and the practice of Lanzhou University is typical for the third one.

"Giant faculty system"--- transformative choice of the governance system of the Faculty of Education, Beijing Normal University

On June 28, 2009, in Beijing Normal University, the Faculty of Education was formally established as a substitute of the former School of Education. The problems at which the transformation aims and the concrete measures adopted are as follows:

Integrating disciplines

Against such problems as the small organizational scale and scattered disciplinary layout, a substantial integration has been made to more than ten former grass-root teaching and research units, including three schools (School of Education, School of Educational Management, School of Educational Technology), three institutes sponsored by capital government (Capital Institute of Educational Economy, Capital Institute of Basic Education, Institute of Rural Education and Development), one center sponsored by the Ministry of Education (Basic Education Quality Monitoring Center), one UN sponsored center (International Rural Education Research and Training Center) and the Institute of Higher Education. Their teaching and research staff were reallocated to 14 new institutes and 11 new comprehensive research platforms based on sub-disciplines or research questions.

Independent administrative power from the university

In this reform, the university distributed more power of decision making to the Faculty of Education. The faculty set up several administrative offices to deal with financial, personnel, student and international affairs, which are all directly report to the Faculty, rather the university-level administrative departments. By this way, the previous bureaucratic "pyramid" model has been removed.

Balanced power between the administration and teaching and research staff

In response to such problems as the lack of balance between administrative and academic power, weakened decision-making and executive power, as well as such phenomena as "administratization" and "official-cored culture", the administrative functions are exercised exclusively by the formerly said new offices, while academic issues are managed mainly by several newly established committees, such as the development steering committee, academic affairs committee, degree evaluation committee, teaching steering committee, personnel committee and so on, where professors are main actors. The party officials or administrators cannot assume any capacities in academic institutions as before. Furthermore, the heads of grass-roots departments and institutes are promoted through competition and directly appointed by the leaders of the Faculty, and have no "official title".

"Special areas" – systems governing some scientific and technological innovation platforms or research bases of human and social science established in 985 Project Phase II

As a new form of the academic grass-root organizations, the scientific and technological innovation platforms or research bases of human and social sciences established in 985 Project Phase II started since 2005, with an ambition of realizing a transformation of the grass-root research organizations of China's research universities from "workshops", "go-it-aloners" and "mom-and-pop stores" to high-level, open and international large-scale ones (Zheng & Wang, 2009). For such a transformation, some platforms and bases have been designed as "special areas" with privileges that the other traditional grass-root departments cannot share equally in the same university.

Direct control of the university

The major issues related to the platforms and bases are decided directly by a specially established leading group composed of the leaders at the university level. The leading group always sets a "985 Project" office, dealing with relevant daily affairs. For instance, the "985 Project" group in Peking University is led by the chancellor himself, who makes decisions for major issues about the platforms and bases under the leadership of the University Council.

Division of administrative and academic power

People engaged in academic activities enjoy autonomous decision-making powers over academic affairs. On the one hand, each platform and base has its respective leading group responsible for design and implementation of the "985 Project" programs, and a council as the top policy-making body to manage its daily affairs by appointing the director of the platform and base. Within the platforms/bases, there are several academic units including institutes, project teams and innovation teams. They are not administrative units. Each platform and base also has a specialized academic consultancy agency, namely, the academic committee, which is an open organization gathering not only internal and domestic first-class experts and scholars in related areas, but also external or even overseas renowned experts and scholars.

Flexibility, openness and resilience

First of all, the platforms/bases are operated as *projects*, i.e., they are no longer fixed and unchanging units relying on a single subject like traditional grass-root units, but are established based on the logic of questions and will be dissolved or reorganized once the problems are solved. Chief scientists or professors hold responsibilities for the platforms/bases, highlighting their academic powers.

Second, the platforms/bases enjoy special and preferential policies that cannot be found in other schools/departments and thus greater autonomy, in terms of personnel recruitment, expenses, salary management, etc. On the other hand, they have to keep good relationships with the relevant departments and institutes because their personnel always keep their posts in these "traditional" grass-root organizations in the university. For example, Fudan University has innovatively blazed a trail in implementing a "dual employment system", that is, people employed at the platforms/bases could also be official staff members of a school/department at the same

time. The two "employers" work together based on an agreement and can share the copyrights of the staffs' research findings but award such findings respectively.

Overall transformation – an example from Lanzhou University

At the beginning of the 20th century, some universities chose overall transformation as their approaches and patterns in conducting the reforms of academic grass-root organizations. One typical example came from Lanzhou University. It began to set up schools in 1998 and started a new round of transformation of academic grass-root organizations since 2003 in order to construct research universities. It has removed almost all departments from the schools and established 139 "new" institutes based on disciplines. The governance system has also experienced transformation alongside with the transformation of the organizational form, which is mainly reflected in the following aspects:

External governance structure

- In this reform, the center of decision making power was shifted downwards and the director of each institute was directly appointed by the chancellor.

Internal governance structure

- While attaching great importance to the academic power of professors, the dual authorities of each director in administrative and academic aspects are also highlighted. The committees of professors have been gradually set up, and the major issues concerning teaching and research must be discussed and decided by the committees. Being an administrative leader and concurrently an academic leader of the subject and a natural member of committees of professors, the director enjoys full power to make decisions over various issues in his institute (Li, 2005).

Reflections on the upper transformational models

The *giant faculty system* of the Faculty of Education of Beijing Normal University, the "*special area system*" of the scientific and technological innovation platforms or research bases of human and social science in "985" universities, and *the overall transformation* of "changing departments to institutes" of Lanzhou University, are all targeted at the problems universally existing in the governance system of academic grass-root organizations in Chinese universities. Along with covering a wide range

of issues and having a vast influence, these reforms have eventually turned out to cause a steady transition and aroused strong responses in the society.

On the other hand, at present, the transformation of the governance system of academic grass-root organizations in universities is still in the stage of partial and initial exploration. New institutional design is either not spread across the whole university in an all-round way, or has not yet been completed. Many measures are nothing but expedients. The transformation is not thorough and complete enough. For example, after the establishment of its Faculty of Education, Beijing Normal University did not carry out the reform of "giant faculty system" universally for other disciplines. The open and flexible new governance system enjoyed by platforms and bases is still their "privilege" while other traditional schools/departments need to endure the besetment of those problems mentioned in Part One of this paper. In the process of the "overall transformation", Lanzhou University did not synchronously implement other supporting institutional arrangements, including the establishment of "committee of professors". It still seems uncertain whether the new governance systems can continue in the future.

In addition, as can be noticed from the above case analysis, although these universities have basically reached a consensus regarding the concepts of the governance system of academic grass-root organizations, they have eventually chosen quite different system designs. This denotes that, through theoretical explorations, people have derived different answers to the question of "what is an effective governance system (ideal type) of academic grass-root organizations?" This also denotes that the theoretical explorations into this question are far from sufficient. All these practices are characterized by pilot reforms. A vast majority of public universities have not yet taken actions. They are still thinking as lookers-on.

One profile of the transformation also needs to be mentioned. It is usually promoted in a top to bottom way. At the central government level, it is the Ministry of Education that promotes, supervises and urges the transformation. In the university, it is the governing body of the university who urges their schools/departments to reform. This decision-making approach has brought about a key issue: people engaged in teaching and research at the grass-root level cannot fully exercise their right of participation, decision-making and supervision. In addition, the rights of the general public to participate in and supervise the transformation (as an important decision of the public universities) have not been adequately exercised. The transformation of the governance system of academic grass-root organizations not only involves the alteration of powers among such stakeholders as the university, administrative heads of schools/departments and chief professors, but also has a close relationship with every teacher and student. It is not only an

affair of the university and government, but also an affair of taxpayers who offer financial resources to the university. Therefore, every public university should make decisions on the transformation of the governance system of academic grass-root organizations on the principle of "publicity and transparency", and try its best to allow various stakeholders to jointly participate in the decision-making process. Every public university should minimize the number of meetings that only allow a few people to attend, and maximize the publicity of information and processes instead of adopting a confidentiality system. So to speak, the Chinese universities do not have a satisfactory performance in this regard.

Last, but not the least, the costs of system transformation should be counted, and any unnecessary costs should preferably be avoided in the process of transformation. The "Reform" is a more or less positive word as it can bring hopes to people. However, in fact, every reform requires some costs. These costs could have been avoided if the original system design was reasonable.The more stable the system is, the better it will be. However, reality is not as satisfactory as expected. Due to the limit of rationality, people cannot always predict the effectiveness of a given system arrangement. Once an opportunity arises, the reform will become inevitable. The same goes for the reform of academic grass-root organization in universities.

In summary, the costs that need to be paid for in the course of transformation include:

Costs of learning and exploration

These include the *cost of collective exploration* and that of *individual exploration*. The former refers to the cost of research and exploration organized by the state or governments at various levels to support the reform of academic grass-root organizations in universities. In order to boost this reform in universities, the Ministry of Education has organized several symposia and invested a lot of human and financial resources in financing several projects to study this problem. The latter refers to the cost of human, financial and material resources and the time invested by universities in this field. In order to establish the Faculty of Education, Beijing Normal University "has conducted sufficient discussion for more than three years and elaborate preparation for more than one year" (Zhong, 2009). If there were any detailed records, one can work out the concrete costs including huge amounts of time as well as human and material resources in this process. The same goes for the reform of Lanzhou University. From *research room of teaching* to *schools* and *departments*, and then to institutes originating from departments, Lanzhou University has gone through explorations for many years. In 1998, Lanzhou University began to establish schools, which at

first coexisted with departments. In 2000, Lanzhou University put forward for the first time the plan to rebuild its academic grass-root organizations suiting the goal of research university construction. At the end of 2002, the university set up an Office for Development and Planning, discussing such questions as "What kind of organization form suits the construction of a research university?" "What would a research university with Chinese characteristics be like?" and "What is the academic organization that matches it?". In 2003, the practical operation began.

Costs of coordination and negotiation

In the transformation process of the governance system of academic grass-root organizations, some people will enjoy higher administrative ranks and power, while others may only see their administrative rank lowered or even lost, with the power changing somewhat in their hands. This will inevitably give rise to contradictions in personnel's attitudes. Just as Professor Zhong Binglin, president of Beijing Normal University, said,

> "It is a grand, good and, at the same time, difficult thing for Beijing Normal University to establish the Faculty of Education. This is a reform with a very wide coverage. The existing management pattern needs to be removed. It involves the reform of concepts and the re-combination and readjustment of human, financial, material and other resources and will inevitably run across various barriers and resistances." (Zhong, 2009)

In order to get to know the views of the relevant groups, e.g. teachers, students and the education authority, towards the reform of the governance system of academic grass-root organizations, the governing bodies of the university and school(s)/department(s) usually organize some meetings. The time, human, financial and material resources spent on that can be regarded as explicit costs of coordination or negotiation. In reality, due to the lack of opportunities for airing views and the fears about the consequences of telling the truth, people normally do not actively and fully express their opinions publicly. Therefore, private conversation and intramural petition and so on become the alternate means for coordinating the personnel and other contradictions. The costs thus generated can be regarded as implicit costs of coordination and negotiation. Sometimes the organized conversation conducted or legal measures adopted are also in fact implicit costs of coordination and negotiation for the system transformation.

Costs of organization

It takes a long time and requires complicated coordination and balance of resources and relations to transform the governance system of academic grass-root organizations. In order to carry out the transformation in a better way, universities usually set up an exclusive leadership and office. Each university equipped with the platform of scientific and technological innovation has set up a corresponding leadership team at the university level. In Beijing Normal University, in order to establish the Faculty of Education, a Leadership Team and an office were formally set up for the preparation work at the end of 2007. Lanzhou University established the Development and Planning Office at the end of 2002, with one of its major duties being to serve the governance transformation over academic grass-root organizations. All these items bear organizational costs.

Besides the costs mentioned above, there are also potential costs that might be caused during the process of transformation of academic grass-root organizations, including the adaptation costs and efficiency losses of all relevant persons in an attempt to adapt to the reform. If the new system is not reasonably designed, additional friction costs and mismatch costs will incur, resulting in further losses of efficiency.

Conclusions

Chinese universities have made an amazing step in the new century in the transformation of the governance system of their academic grass-root organizations, and have explored quite a few models of transformation. However, on the whole, the transformation is just kicking off and has not been spread across all public universities. Moreover, it is very common that two or more systems exist simultaneously at the same university. In addition, the transformation is not easy to carry out and we are required to pay huge transformational costs. However, just as pointed out by such scholars as Peter H. M. Ruys, professor of the Department of Economics of Tilburg University,

> If the reform is carried out towards a kind of standardized and optimal governance, huge costs of social transformation may be brought to the society. However, policies which do not involve the implementation of standardized governance will bring about another type of costs, namely, the costs of social transactions (Coase, R. H. et al, 2003).

The same goes for the transformation of the governance system of academic grass-root organizations. Without paying the above-mentioned transformational costs, we will have to continue to pay other heavy transaction costs. In the opinion of Douglass North,

"If the anticipated income exceeds the anticipated costs, an institution will be innovated." (North, 1994)

No matter how huge the costs would be, Chinese universities should break the present status quo of low-level equilibrium and reform the governance system of academic grass-root organizations, as long as the reform can help to enhance academic productivity and quality and can better serve the training of innovative talents and the construction of national innovation system. Only by this way, the universities can promote their transformation and change their grass-root departments or institutes from "closure" to "openness", from "administrative domination" to "co-governance", and from "bureaucratic management" to "grass-root autonomy".

References

Clark, Burton R. (1983). *The Higher Education System : Academic Organization in Cross-National Perspective*. Berkelly, Los Angeles, London : University of California Press.

Coase, R. H. et al. (2003). C. Ménard (ed.) *Institutions, Contracts and Organizations: Perspectives from New Institutional Economics.* Translated by Liu, G. et al. Beijing: Economic Science Press. 513.

Li, F. S. (2005). Set up New-type Research Institutes and Activate Grass-root Institutions for Teaching and Research. C*hina's Higher Education*. (6). 5-7.

North, D. C. (1994). *Structure and Change in Economic History*. Translated by Chen, Y. et al. Shanghai: Shanghai Joint Publishing & Shanghai People's Publishing House. 66.

Yang, X. M. & Zhou, Y. H. (2002). *The Work Unit System in China*. Beijing: China Economic Publishing House. 59.

Zheng, X. Q. & Wang, Z. R. (2009). *The Reform and Development of Academic Grass-root Organizations in Research Universities.* Beijing: Tsinghua University Press.

Zhong, B. L. (2009). *The Set-up of the Department of Education Is Not Merely for a Mergence of Schools/Departments.* [online] Available at: <http://www.edu.cn/jiao_yu_ping_lun_1070/20090707/t20090707_389394.shtml> [Accessed 28 August, 2011].

Zhong, B. L. (2009). Strengthen the Special Profile of the University and Promote Educational Innovations – Thoughts on the Set-up of the Faculty of Education. *Research of Chinese Higher Education*. (12). 19-21.

Chapter 16

The logic of China's university teaching reform in transforming period

Nian Xiao

Transformation is a fundamental changing process of the structure, operation mode, concept and system of a certain subject. The transformation of universities, when viewed from an exterior perspective, can be understood as a process of coordinating the university teaching reform with social and governmental relationships. However, from an interior perspective, the teaching reform is in the core of the university transformation. The university teaching reform has been in the midst of transformation ever since 1978, but varied in contents and processes in different periods.

Transformation of Chinese universities

Transformation has been a key feature of China's higher education development in recent years. The transformation of universities is a process of partial qualitative or quantitative change to the constituent parts of universities such as students, teachers, teaching activities, academic organizations and administrative system under certain internal and external influences. Among the numerous factors that have influenced the transformation of Chinese Universities in recent years, the transition from planned economy to market economy as well as the gradual development of the socialist market economy are of fundamental significance. Also important are the

impacts from the national government, as social and economic transformation will inevitably bring about the transformation of higher education.

The transformation of Chinese universities features "decentralization" as its core, focusing on the adjustment of two power relationships: first is the power reconstruction between the competent authorities of higher education at the central level and those at the provincial level (including autonomous regions and municipalities directly under the Central Government); second is the adjustment of the power relationships between governments and institutions of higher education. The former deals with the allocation of the hosting power and administrative power; the latter involves the adjustment of the administrative power and the school-operating power (institutional autonomy).

A review of China's teaching reform in Institutions of higher education since 1978

As per the variations in focuses and main actors, China's teaching reform in institutions of higher education since 1978 can be divided into three stages:

Stage I (1978–1988): the government playing a leading role

This stage had witnessed the construction of the teaching system in institutions of higher education (also referred to as "institutions") under the guidance of the government. It started from the adjustment of the education specialties catalogs. In August 1978, the *Notice on the Investigation and Adjustment of the Specialties in the Institutions of Higher education* was issued jointly by the Ministry of Education and the State Planning Commission, pointing out that the obsolete and backward specialties with inappropriate coverage or even wasteful duplications had resulted in poorly defined goals and weak basic theories; the nomenclature of specialties must therefore be adjusted. Then, *the specialties catalog for undergraduates'* had been amended and modified for three times in 1987, 1993 and 1998 respectively. All of the amendments should be viewed as strategic choices of basic and overall significances for the undergraduate teaching reform based on the actuality of China's higher education and social and economic development. In addition, efforts had also been made for promoting a relatively flexible and autonomous teaching system. For example, institutions were given a free hand to revise their teaching plans, provide more optional courses, and emphasize "the mutual fusion between arts and sciences".

Such systems as credits, majors and minors, double degrees and specialty transfer had been put into practice on a trial basis, and the teaching contents had been enriched and updated. Furthermore, policies had been used as incentives to encourage the institutions to carry out autonomous teaching reforms. *The Decision of the Central Committee of the Communist Party of China on the Reform of the Educational System* promulgated in 1985 explicitly defined the rights of the institutions to "adjust the specialty orientations and lay out teaching plans and syllabi in addition to editing and selecting the teaching materials". The *Decision* also took "the reforms of teaching contents, methodologies and systems as well as the enhancement of teaching quality as tasks of great importance and urgency. In order to eliminate the existing defects, it is required to actively carry out various experiments for the teaching reform by, for example, changing the excessively narrow coverage, condensing and updating the teaching contents, involving more practices and optional courses and fewer compulsory courses, implementing the credit system and double degree system, and giving students more time for self-study and extracurricular activities". All those provisions had become the guidelines for all sorts of institutions in carrying out teaching reforms in China.

Stage II (1989–1998): guidance and stimulation

Since 1990s, with an all-round transformation of the economic and social development in China, the development of higher education and the student cultivation had revealed the problem of inadaptability in an increasingly evident way. It had become a consensus between the government and all kinds of institutions to promote a teaching reform in a comprehensive manner. On the one hand, in this stage, the national policies were still used to guide and promote the university teaching reform. For example, as required by *The Outline for Educational Reform and Development of China* issued by the Central Committee of the CPC and the State Council in 1993, education at all levels should "update teaching contents and adjust curriculum structures in accordance with the latest achievements in the modern scientific, technological and cultural development and the actual needs of the socialist modernization drive". The *Plan for the Reform of Teaching Content and Curriculum System of Higher Education Facing 21st Century* established by the former State Education Commission was put into practice in 1994. The Plan was implemented in a separated manner as per six disciplines and subjects including arts, economy, law, science, engineering, agriculture and medicine, dealing with the inner quality and cultivation mode for future talents, training goals and standards of each specialty or group of specialties, their curriculum systems and structures,

teaching contents and systems of basic and core courses, and innovations regarding the teaching materials, means and methods, etc. On the other hand, the state encouraged the institutions to carry out reforms and explorations in teaching. According to the *Regulations on Awards for Achievements in the Teaching* launched in 1994, any educational and teaching reform schemes that have produced obvious positive effects on the uplift of teaching proficiency and quality as well as the achievement of training goals should be awarded. The system had immensely promoted the teaching reform of the institutions of higher education.

Another feature of the university teaching reform during this stage was the general adoption of the market principle. As explicitly indicated in the *Interim Provisions on Undergraduate Specialties for Regular Institutions of Higher Education* issued in 1993, the institutions should have the right to independently evaluate and approve the specialties. The institutions, while enjoying certain rights to decide on their own specialties and adjustments, had put an end to the isolated and self-enclosed development which once divided them from the market. The institutions in this stage had incorporated more and more market principles into their specialties, having reflected in an increasingly distinct manner the features of market economy.

Stage III (1999–present): government regulation, market regulation and deepened institutional autonomy

As for the specialties setting, it is explicitly indicated in Article 30 of the *Higher Education Law of the People's Republic of China* that "institutions of higher education should autonomously set up and adjust disciplines and specialties according to the law". It provides legal grounds for decentralizing the power of setting up and adjusting specialties. The Ministry of Education has introduced the major adjustments to relevant provisions on the examination and approval of the specialties. The examination and approval of the undergraduate specialties included in the catalogs is generally done by individual institutions, the evaluation of interdisciplinary specialties – by competent authorities in universities, and that of the specialties not included in the catalogs – by the Ministry of Education. The revision and amendment of *Provisions on Undergraduate Specialties for Regular Institutions of Higher Education* was released in 1999 and attached great importance to "the promotion of the autonomous operation of the institutions in accordance with the law" in the General Rule. According to the revisions and amendments, the institutions should have the rights to set up their specialties and "the institutions should, in principle, set up their specialties as per their attributes and the categories into which they fall so as to develop competitive edges and distinctive features, but a proper number of specialties out of the range of

their attributes and categories are also allowed if necessary and possible". (Ministry of Education, 1999) Besides, the differences between regular and key institutions in terms of authorities in setting up and adjusting the specialties were removed.

The Ministry of Education released a special notice in January 2000, announcing the implementation of the "Reform Project of Higher Education and Teaching in the New Century" based on the initial results achieved by the implementation of *Plan for the Reform of Teaching Content and Curriculum System of Higher Education Facing 21st Century.* It marked the in-depth development of China's teaching reform for institutions of higher education, as it suggested an overall and comprehensive reform and practice of the student-cultivating mode, teaching contents, curriculum, systems and teaching methods. The *Several Opinions on Strengthening Undergraduate Education and Improving Teaching Quality in Institutions of Higher Education* (2001, No. 4) printed and distributed in 2001 put forward 12 pertinent measures in the light of the teaching quality of institutions after increasing enrollment. In December 2004, the Second National Conference on the Undergraduate Education in Regular Institutions of Higher Education was held and the *Opinions on Further Strengthening Undergraduate Education in Institutions of Higher Education* (2005, No. 1) was printed and distributed which highlighted the importance of improving teaching quality while enlarging the scope and scale. Under the guidance of the above-mentioned two documents, all institutions had begun to explore autonomously the way to conduct reforms of teaching management, teaching inputs, student-cultivating mode, teaching contents and teaching methods.

In 2003, the Ministry of Education announced the all-round implementation of evaluation based on a five-year cycle. From 2003 to 2008, 589 institutions had been evaluated in terms of the quality of undergraduate education. This round of evaluation was more like a qualification assessment, but had made more active contributions as it enabled the evaluated institutions to reach a more systematic and objective diagnosis and conclusion over the existing problems of their education and teaching. Through the preparation, implementation and expert feedback of the evaluation, the institutions were advised on how to independently and actively plan and carry out teaching reforms based on their characteristics and under the guidance of national policies.

Besides evaluation, the educational authorities had also adopted some other measures based mainly on project construction, so as to further systematically guide institutions to carry out autonomous teaching reforms. For example, the "Teaching Quality and Reform Project of Undergraduate Education in Institutions of Higher Education" (2007–2010) ("Quality Project" for short) had invested 2.5 billion Yuan in construction, covering almost every aspect of higher education and

teaching, including the strengthening of educational management, reform of the talent-cultivating mode, construction of teaching infrastructure, adjustment of specialty structure, building of teachers' team, etc.

The logic of teaching reform in China's regional universities

Based on the introduction of China's university teaching reform, the logic of China's teaching reform in regional universities can be understood in terms of the main actor, driving force, approach and contents.

1. The main actor in the teaching reform – shifted from the government to the institutions of higher education themselves.

With the reform of China's higher education system, the main actor in the policy-making process of the teaching reform has shifted gradually from the government to the institutions themselves, which is a basic characteristic of the teaching reform in institutions of higher education since China's reform and opening up. Therefore, it is well justified to say that the effective promotion of policies regarding the described teaching reform in institutions is closely linked with the enhanced independence and autonomy of such institutions, as they are most aware about the problems related to the quality of teaching and cultivation and are capable of making improvements. The institutions of higher education, when deciding on reform policies, are able to predict the future tendency and perform in a social-demand-oriented way with a goal of preparing the students for successful functioning in the modern society. Therefore, their policy-related decisions are in most cases in accord with the actual needs for student cultivation as required by social developments. The more accurate an institution can predict the social needs and the more reasonably allocate its teaching resources, the more remarkable the effects of the reform will be. In fact, we are still in a stage where government policies and institutional policies are coexisting with each other. That is to say, the progresses, items and resources of the teaching reform are still under the control of the government to a great extent, leading to a suboptimal performance of the initiatives of institutions as the main actor in the reform. In practice, if the institutions are given more freedoms to carry out teaching activities and truly become the main actor in shaping teaching reform policies, the efficiency of such reforms would be further improved.

2. The driving force of the teaching reform shifted gradually from the promotion by government to competition among institutions of higher education

Since the reform and opening up, the main driving force behind China's higher education reform has come from the competition among institutions introduced during the higher education system transformation since 1980s which has granted institutions the autonomous school-operating power. The realization of the institutional autonomy is in fact linked to division of resources and powers in higher education which are uniformly managed by the government. Each institution has become a legal entity eligible to operate its schools in a socially relevant way. Therefore, the institutions with fast development will be entitled to more rights and benefits, and those with remarkable achievements in terms of the teaching reform and student cultivation will stand out in the fierce competition. In such a system, improving the quality of student cultivation has become the driving force behind the teaching reform of institutions.

The competition among institutions has facilitated the optimized allocation of teaching resources and autonomous teaching reforms. Though occasionally controlled by the government through administrative measures, the institutions are still encouraged by the benefit-driven systems to take the initiative in conducting explorations of the teaching reform or bargaining with the government over certain teaching resources. While the institutions are often criticized for being superficial and profit-driven in implementing teaching reforms, we cannot ignore the important role that the competition has played in promoting the achievements of the reform. However, how to shift the competition among institutions to the one among disciplines and enable the experts in each discipline to make decisions for the allocation of teaching resources is an important topic in the reform of teaching management in the future.

3. Government's regulations changing from planed control to macro-control

An important feature of China's teaching reform in institutions of higher education is the gradual introduction of the market system through macro regulations implemented by the government. With the deepening of China's higher education system reform, the governmental departments have reduced direct interventions into the management over specific teaching activities. Alternatively, they shifted to guiding and regulating the teaching reform through financial input, policies, evaluation and information, etc. The macro regulation has guaranteed a successful and smooth transition from planed management to market regulation, having avoided severe disorders or declined quality during the period of great development of higher education and ensured a parallel development of the institutions with the teaching reform without any conflicts. At

present, the development of specific institutional characteristics and teaching quality have become a general tendency of the teaching reform in institutions of higher education. However, the emphasis of future reform is yet to be defined. The government takes to further scientifically regulate the teaching activities of institutions striving for a balance between the government regulation and market adjustment.

4. The content of the teaching reform: from partial adjustment to systematic change

China's university teaching reform since 1978 was first marked by the adjustment of the specialties and teaching management system. However, as the government, market, institutions of higher education and students have become the stakeholders of the university teaching reform, the reform is required to be more diverse and systematic which involves handling the following issues:(1) Classification of institutions of higher education and regional universities' choice

How should the regional university be labeled in the classification of institutions of higher education is the first problem encountered in the university teaching reform. It should first consider whether there is any correspondence in available classification lists for regional universities and if any, what kind of correspondence it is. According to one of the existing classifications (including research university, research and teaching university, and teaching university), there is no doubt that the overwhelming majority of regional universities fall into the type of teaching university. Does that mean the regional universities can only choose their way of teaching reform on the basis of their position as "teaching" or "application-oriented" university? If we trace the history of the development of the U.S. universities, we will find that there seems to be no absolute correspondence between the administrative affiliation and the type of development. However, in retrospect of the history and status quo of the development of China's regional universities, there seems to be a direct link.

(2) The goals orientation for student cultivation

Setting the goals for student cultivation is the starting point of the university teaching reform. Yet, we need to ponder over the questions of how to confirm, in a scientific manner, the goals for talent cultivation in universities, what mechanisms should be used to suit the goals to the demands of the government, society and students as well as the academic needs of the universities themselves, and whether there is a definite correspondence between the goals and the types of universities. An obvious truth is that there are differences between traditional (research) universities and regional (application-oriented) universities in terms of their missions and orientations. The

mission of the former is to provide high-level and advanced talents for the country; the latter directly addresses the economic and social needs of the local area, in an attempt to cultivate personnel with applicable abilities to suit the local (regional) economic and social needs. The graduates from regional universities are application orientated with a wide range of knowledge and skills, and are mainly employed by grass-roots organizations. When it comes to the specialties setting, a great importance is attached to the expansion of knowledge and skills in order to enhance the adaptability of graduates. The training mode highlights the need for flexibility and adjusts the cultivation schemes in a timely manner as per the market demands.

(3) The relationship between teaching and research

The importance and effects of teaching and research for modern universities are both self-evident; however, there is a contradictory relationship between teaching and research as the intensity of one falls while another rises. Ernest L. Boyer, the 7th President of the Carnegie Foundation for the Advancement of Teaching, pointed out in his report "College: The Undergraduate Experience in America" published in 1987 the problems existing in the U.S. undergraduate education and the importance of university teaching and mentioned that the teaching quality of higher education must be improved and the attention must be given to the internal aspects of higher education, including the teaching conditions, university reforms and teachers' education. He extended for the first time the meaning of "scholarship" in his report titled "Scholarship Reconsidered: Priorities of the Professoriate", having recognized and valued different types of scholarship, including the scholarship of discovery, scholarship of integration, scholarship of teaching, and scholarship of application. Hence, this work elevated "teaching" to the height of "scholarship". According to him, the scholarship means "the discovery of new knowledge through research, the integration of knowledge through the development of curriculum, the connection of knowledge with existing problems through the application of knowledge and the spread of knowledge through consultancy or teaching" (Ernest L. Boyer,1990). Lee Shulman succeeded Boyer as the 8th President and further elaborated the concept of the scholarship of teaching. He highlighted the importance of student learning, and developed "the scholarship of teaching" into "the scholarship of teaching and learning". According to him, teaching can be referred to as the scholarship because: first, its process is the same as that of scientific research, as both teachers and researchers need to select problems, search for the problem-related resources, determine and implement solutions, and analyze and reconsider the results. On the other hand, their achievements all need to be published, exchanged, assessed and constructed.

The notion of "the scholarship of teaching" is a breakthrough in valuing teaching activities, but also a reflection of a desperate reality that the relationship between teaching and research will continue to be an unavoidable issue in the teaching reform of regional universities for a very long time.

(4) **Teaching system – shift from planning to selecting**

Since the teaching system based on planning is losing its foundation, it has to shift into a selecting system as an inevitable trend. On the one hand, the selectivity (i.e. enabling students to select the learning contents and methods on their own) reflects the shift of higher education from the undue emphasis of promoting social development to its original intention of promoting social and individual development in a combined way. On the other hand, some established higher education reforms have also presented the objective requirements for the implementation of the selective system. For example, as the institutions implement the cost-sharing policy, the costs borne by students have therefore enabled the students to enjoy the corresponding rights to make choices over their own studies. Such rights are available not only before, but also after the admission into universities. Moreover, the market-oriented employment system for graduates which gives them free rights to select jobs also requires the students to design for themselves the learning contents and developments in the institutions to a certain extent, in order to adapt to the changing job markets. This design is of course based on the selective system. However, it is impossible for such a teaching transformation from planning to selecting to be realized overnight; there are still many difficulties. The existing teaching system of the institutions of higher education is not yet ready for a complete substitution of planning with selecting when viewed from the perspectives of concepts, contents, management and forms, though the impacts of such a transformation are of historical significances to the higher education system and its development in China.

References

Hu, J. H. (2008). On China's Higher Education Transformation in Recent Years. Journal of Nanjing Normal University (Social Science Edition). (11). 74–79.

Wu, Y. (2010). An Analysis on the Policy Transformation of Undergraduate Specialities in China's Institutions of Higher education China Higher Education Research. (7). 36–39.

Shi, J. H. (2008). The Basis and Direction of Undergraduate Education Reform in China's Research Universities. Modern University Education. (1). 62–68.

Wang, J. H. (2011). The Explanatory Framework of University Transformation. Journal of China University of Geosciences (Social Sciences Edition). (1). 101–108

Chapter 17

The impact of leadership on Chinese higher education Institution merger –a case study from institutional leadership perspective

Dong Li

Introduction

Leadership and management of higher education institutions have important roles in managing and coordinating complex changes such as a merger between higher education institutions. In order to build a new institution, both internal relationships and external relationships have to be oriented towards a new goal (D. Li, 2010; D. Li & Kohtamäki, 2011). Carlson (1994) mentioned that the achievement of a mutual-growth merger requires a new vision of higher education management, and its ultimate success depends on the leadership provided by the overall chief executive officer. Cray (1987) shed light on how difficult mergers can be for chief executive officers and he stated that they require "fierce determination, considerable endurance, and thick-shinned aggressiveness." From these points, it can be established that the leadership in merged universities is a major factor that influences the success or failure of the merger.

In this paper, the leadership of a merged Chinese university is studied by considering human aspects of leadership: what leaders think how they behave and how they overall orient to their roles as leaders. This paper is motivated by the author's current study on the leadership characteristics related to mergers of Chinese higher education institutions, as well as previous studies on the relevant topics. In this paper, the aim is to employ Bolman & Deal's reframing theory to examine the main

challenges of the merger in leadership and management dimension, to explore the leadership styles of a case university's institutional level leaders and try to find how the merger influenced the leadership. How do the styles of leadership react with the integration of the pre-merger institutions in a Chinese merged university? What can be learnt from the Chinese experience by other counties which are planning or implementing the mergers in higher education institutions, such as Finland?

Background

The Chinese government began a series of reforms in the national higher education system in the 1990s. Mergers of higher education institutions were one of the most important elements in this reform, and most of the key universities in China have been involved in this process (D. Li, 2004; D. Li, 2011). In this reform wave, there were more than 430 new merged higher education institutions, and more than 1400 higher education institutions were involved (D. Li, 2011).

With respect to the studies of the merger in Chinese higher education has received a considerable amount of attention from higher education researchers. Some research has been undertaken to investigate the possible implications of mergers on the national education policy and to the individual institutions involved. The available literature covers several categories. First, a particular portion of the literature is, at best, anecdotage in nature or is in the form reports (Dai; Zhou, 2001). Second, some items from the literature are focused on abstract summaries of experiences, which fall short of being concrete studies of practice (Cai, 2002; H. F. Chen, 2001; Wang & Tang, 1997; Zhou, 2001). Third, some of the literature provides a macro-view from the perspective of the national government. This branch of the literature emphasises and analyses the advantages of the mergers of higher education institutions, and thereby ignores the complexity and difficulty of the mergers (Pang & Zeng, 1999; Xia, 1998; Zeng, 2000). Fourth, in recent years, some researchers have completed their thesis and doctoral dissertations on mergers in Chinese higher education. For example, Li D (2004) studied mergers in Chinese higher education institutions in the 1990s, which explored the main factors that have been influenced the nature and outcomes of the merger. One doctoral dissertation was completed by Wan (2008). In her dissertation, Wan provided a conceptual framework based on the external and internal contexts of the impact on the merger of higher education institutions, and to explore the processes and outcomes of a merger case. Finally, regarding the governance, management and leadership arrangements in merged higher education

institutions, most of the articles focus on multi-campus administration (A. P. Chen & Luo, 2000; H. F. Chen, 2001; Y. C. Chen & Shen, 2001; Y. C. Chen, 2002; Shen, Chen, & Liao, X.Y. & Luo, Y., 2001; Yin & Dai, 2000; Yin & Dai, 2000; Yin & Dai, 2000), however, above studies have not yet undertaken a systematic analysis of the leadership dimension from the leadership theory perspective in Chinese merged universities.

From an international perspective, the merger phenomenon of higher education has led to a number of researchers to paying attention to this field. Most of them have focused on presenting a detailed understanding and interpretation of the typical merger in higher education or they present the basic conception of a merger (Eastman & Lang, 2001; Fledler, 1971; Millett, 1976). Some researchers have analysed the national reform, policy, the motivation, process (Eastman & Lang, 2001; Fielden & Markham, 1997; Goedegebuure, 1992; Harman, 1988; Harman & Meek, 2002; Hay & Fourie, 2002; Kyvik, 2002; Meek, 1988; Skodvin, 1999).

With respect to the leadership dimension, James Martin and James E Samels (1994) provide the core principles of merging colleges for mutual growth. They emphasised the enhancement of complementary missions, strengthening academic offerings, and improving administrative efficiency. They also mention that the key to successful implementation is diversified planning. However, they have not given the analysis in-depth on how to transfer these principles into the management and leadership practice.

The importance of quality leadership in a transformation effort can not be over emphasised (Hipps, 1982; Peterson, 1982). In a merger, it has been argued that strategic and organisational fit offer the potentiality for synergies, but the realization of those synergies depends entirely on the ability of leaders to manage the post-merger process in an effective manner (Green & Mitchell, 1979). In most studies about mergers and acquisitions the need for good leadership is often taken for granted and has not been well articulated and studied. Sitkin and Pablo (Sitkin, 2004) noted that leadership is treated in an almost off-hand way in the literature, that seems to reflect the need to acknowledge what is an obviously important factor, while sidestepping the need to address the issue substantively.

Therefore, this study employs the case study method, basing on Bolman and Deal's (2008) reframing leadership theory, the author has tried to explore the role of the institutional level leadership in the merger situation. To this end, two research questions have been derived:

1) From institutional leadership perspectives, what are the main challenges that the institutional leaders are facing in the merged university?
2) According to Bolman and Deal's theory, how do they understand the impact of the leadership styles on the nature and outcomes of the merger?

Reframing leadership theory

Bolman and Deal's reframing leadership theory provides the cognitive frames approach, which has been employed in the field of higher education to explain leadership and management in the changing situations. Bolman and Deal suggest that leaders display leadership behaviour in one of four types of framework: Structural, Human Resource, Political, or Symbolic. The main content is shown in the following Table: 1.

Table 1. Overview of the four–frame Model (Bolman and Deal, 2008, P.18)

	Structural	**Human Resource**	**Political**	**Symbolic**
Metaphor	Factory or machine	Family	Jungle	Carnival, temple, theater
Central concepts	Rules, roles, goals, policies, technology, environment	Needs, skills, relationships	Power, conflict, competition, organizational politics	Culture, meaning, metaphor, ritual, ceremony, stories, heroes
Image of leadership	Social architecture	empowerment	Advocacy, and political savvy	Inspiration
Basic leadership challenge	Attune structure to task, technology, environment	Align organizational and human needs	Develop agenda and power base	Create faith, beauty, meaning

Based on the four frames model, Bolman and Deal developed the effective leadership model. The style can be either effective or ineffective, depending upon the chosen behaviour in certain situations as the Table 2 showed. In this table, Bolman and Deal provide a four dimensional frame to diagnostic model for the leadership. Boman and Deal's reframing theory has been widely utilized in higher education field, such as, Bolman and Gallos (2011) developed *Reframing Academic Leadership*, Vuori's study (2011) on *Leadership Frames of Program Directors at Finnish Universities of Applied Sciences*. This study employs the reframing theory as its theoretical framework to examine whether the institutional leaders reframe their perspectives to fit a merger situation, and promote the integration of the merger.

Table 2. Reframing leadership ((Bolman & Deal, 2008,p.356))

Frame	Leadership is effective when		Ineffective Leadership	
	Leader is:	Leadership process is:	Leader is:	Leadership process is:
Structural	Analyst, architect	Analysis, design	Petty tyrant	Management by detail and fiat
Human resource	Catalyst, servant	Support, empowerment	Weakling, pushover	Abdication
Political	Advocate, negotiator	Advocacy, coalition	Con artist, thug	Manipulation, fraud
Symbolic	Prophet, poet	Inspiration, framing experience	Fanatic fool	Mirage, smoke and mirrors

Source: Bolman & Deal, 2008, P.356

Research method

In this paper, the author conducted the study by his own research on the leadership in Chinese merged higher education institutions. Based on the data that collected during 2003-2004 in a Chinese merged university, the author has done the further interview in this university in 2011. Since the author promised interviewees that this study will be anonymous, in this paper the case is called as "NewU".

The NewU was founded by merging three universities through the two-time mergers. The first time merger happened between two national key Universities in 1993. We call them as University A and B. The second time merged with the third University C in 2000. More detailed information can be found in Table 3. In earlier of the 1990s, it was the first merger case between two national key universities in China. If we consider about its two times' merger together, in a way, this case likes the merger of Aalto University in Finland in 2010. This study focuses on the first time merger, namely, the merger stage between A and B, since this merger had been undertaking very complex process and it was very typical case in China.

The interviewees' choice: The interviews mainly focused on the institutional leaders who were taking part in the whole merger process in the first time merger, such as, rector, vice rectors, the general secretary of Chinese Communist Party, and vice general secretaries. With the help of a former leader, the author successfully interviewed four institutional leaders. In this paper, the author uses L1, L2, L3, L4 to instead of their name. Before the interview, the author sent these interviewees the

instrument – "Leadership Orientation (Self)" developed by Boman and Deal (see Appendix). The main function the instrument was to help them understand the reframing theory. During the interview, the author gave the more detail descriptions on this theory, and then asked them relevant questions from four perspectives (structure, human resource, political, and symbolic). The research questions are as the core questions to conduct the interview, and in the meanwhile, the author also asked some relevant sub-question.

The case description

***University A*:** it was founded in 1896. It was comprehensive university with remarkable advantages in literature, historical science, religion, mathematics and biology. It was a very strong and famous national key university under the leadership of the Chinese Ministry of Education (hereafter referred to as Chinese MOE).

***University B*:** it was the product of the reform wave of *Yuanxi Tiaozheng* (the nationwide restructuring reform) in the 1950s. Before 1993, university B was a top level national key university of science and engineering in the fields of materials science, chemical engineering, waste conservancy and hydroelectricity, mechanics, textile and light industry. It was administered by Chinese MOE.

University C: it originated from the private Medicine University. It was established in 1910. It was a prestigious university in both national and international university market in the fields of stomatology, biomedicine, basic medicine, and clinical medicine. University C has been a famous national key university in China before it was merged to the NewU in 2000.

The process of the NewU merger

Most of researches divided the merger into three phases: 1) the pre-merger phase; 2) the transition (implementation) phase; 3) the integration (or post-merger) phase (Eastman & Lang, 2001; Harman & Meek, 2002; D. Li, 2004; D. Li, 2010; D. Li, 2011; Wan, 2008). With regard to this case university, the whole process agenda is shown in Table 3. The pre-merger phase: The initial merger idea started in 1992. The Chinese MOE announced the merger between A and B on 24th, November, 1993. With the effect of the national government requirement, the local provincial government decided to merge University A and B in the early of 1993. *The imple-*

mentation phase (1994–2000): 1994–1997, merged all administrative departments; 1998-1999, merged all faculties, units, and schools. *The post-merger phase* (2000–), in 2000, merged again with one medicine science university C.

Table 3. Agenda of NewU

November 1992
The idea came from top level leaders of both University A and University B
January 1993-
- After the discussion and receiving support from both universities' Chinese Communist Party Committees in January, the rector, general secretary, as well as relevant vice leaders of two universities submitted the idea of merger to local provincial government
- In February, obtained support from local Government.
- In May, obtained the support from MOE.
- In November, MOE officially announced the merger plan
- Local provincial government gave extra 150 Million RMB Yuan to the new university and help them to apply for "Project 211"
- Establish steering group to prepare the merger, including the name of merged university, budget making, administrative departments, faculties and disciplinary merger issues.
1994-1997
- The new name was announced in April 1994
- Based on the equal principle, the new leader group at top level of NewU was established by government
- At the beginning, only top level leaders and a few administrative departments joined together work, the rest departments and all faculties were still separate.
1998-2000
- Adjusted and merged all departments, faculties, and units
- The restructuring model of "Five Unifications" were established in NewU, namely, "one single leadership group, one organization, one administrative system, one financial administration department, and one development plan."
2000
- Merged with University C

(Source: adapted from Li, D 2011)

After two-times mergers, the number of students and staff in NewU was respectively 60,000 and 11,994. Among the staff, there are 3,010 teachers and 1,883 researchers. The total number of Professors and senior researchers was 930 in 2002. In the 1990s, NewU was the first "strong – strong" merger case, and the biggest university

in China. Through the merger, the structure of the governance system in NewU was shifted to two-tier administration system. In fact, most of the Chinese merged universities design their organizational structure based on the "Five Unifications" principle (see Table 3). The two-tier administrative structure was adopted, namely, "institution - middle units (academic units, administrative units, units of CCP, and affiliated enterprises)".

Findings and discussion

As the conclusions that many researchers have gotten the merger of higher education institutions are very complex process. There are a lot of challenges that new university leaders will be facing. In this section, the author based on Bolman and Deal's reframing theory to explore the challenges of the NewU from four frames aspects, as well as examine their leadership styles.

Structure perspective

According to the Bolman and Deal's reframing theory (Table 1 and 2), an organisation can be seen as a factory or machine. The central concepts of leadership in this frame are rules, roles, goals, policies, and so on. The effective leaders should own the skills as analyst or architect. They should be good at structuring their work, carefully designing their reform process and developing a reasonable strategic plan, and so on.

With respect to the structure leadership style, all of these interviewees thought that they utilized the structure style in the restructuring process. In the beginning of the merger, they emphasized the rules, polices, and organization structure and design, etc. The merger process was following up both the government and the internal design as Table 3 shows: firstly, the top level group combined together; secondly, the middle level administrative sectors were merged, finally, they merged all academic sectors (schools and faculties). The final outcome realized the design as the "Five Unifications", which formed the centralization of the administrative power. However, when asked these leaders, some of them didn't think that they were "always" using structural leadership skill, such as, the L1 mentioned:

> "We designed and issued many relevant internal policies and rules during the pre-merger phase and implementation phase, however, we were the first case of merger between

two key universities in China, and we did not have any experience or other references to learn. The complex situation was out of our imagination. It was very difficult for our institutional leadership group to cope with so many challenges. I have to say we could not always follow up the design and schedule. ”

In the pre-merger phase, the big issue was about the new name of the merged university, the government proposed that the university A's original name should be continually used as the name of the new university. But, University B's society was not support this decision. They thought these two universities almost had the same level reputation in China, and their sizes were almost same. So they supported to use a new name. After the internal fighting and the negotiation with local government, a new name was decided. However, they received a lot of negative comments on the name in the followed years. Under the influenced by the vice-primer, and MOE, the name of merged university was changed back to that of university A. The fighting on the name was the painful experience for both sides, as one leader told to the author:

“Because we could not reach the agreement on the name of NewU, we had to choose a name that can be accepted by both sides in that period. The debate had been undergoing almost four years. From this perspective you can image how tension of the relationship was between two pre-merger institution's communities.” (L3)

During the merger process, the new university lunched a lot of rules and policies. Some policies were forwarded from the relevant governmental documents. There were also a number of internal policies. For instance, regarding the university organisation structure, the university decided firstly combined some important centre administrative offices and departments, such as financial department, human resource department, academic affair departments, and so on, then extended to all administrative departments, which led to a lot of challenges. Specially, as for some middle level leaders and common administrators, they felt that their job and future were uncertain. This led to they could not concentrate on their normal work. From another hand, some policies were seen as being too general, which led to the leaders of the schools or departments not knowing how to implement. In that period, many issues in the whole university were uncertain. With respect to the new organization structure and design, these interviewees mentioned that they received a lot of against from both sides' academic societies. With regard to these problems, two leaders explained as the following:

> "Even though we have a strategic plan for the merger, but we could not guarantee all policies and rules are following up the long-term strategic purpose. Sometimes, we had to set up the temporary rules or policies to deal with some urgent situations, in particular, some major challenges came from the human resource and financial resource fields. For example, how to distribute the budget money and external investment of government to two original campuses? Even in faculty level, regarding the resource distribution, we were also facing a lot of challenges. The struggles were always taking place between two parts. The process was so complex during the merger"(L2).

> "If rethink our merger process, we had a lot of problems that could have done better. For instance, if we had a good design for the organisation structure, then we could have shown the whole organisation structure at the beginning. If doing so, we could avoid a lot of confusions for staff. "(L4)

With respect to the whole merger process, all interviewees thought it was a complex process. As the institutional leaders, all of them thought their teaks were very hard to deal with these challenges. According to the interview data analysing, we can found: On the one hand, their pre-merger phase was too short. Many of designs should be done before the merger, but they did during the implementing. On the other hand, before the implementation, the government and institutional leaders were taking into account only the positive aspects, while ignoring the negative side, in other words, they underestimated the difficulties of the merger.

However, based on their over rating, comparing with other perspectives, all of interviewees felt that they use structure skills more often than other three frames (human resource, political, and symbolic), which means they often use the structural styles in the leadership and management practice.

Human resource perspective

According Bolman and Deal's theory (see Table: 1), they see an organisation as a family. The human resource frame's central concepts are needs of individuals and organizations, Skills, relationships, etc. it is emphasis on the satisfaction, motivation, empowerment, productivity, and skills development, as well as caring and encourage people. Through the interview, all of interviewees agreed with this perspective and recognized that they all used this leadership style in their practice. In the merger process, these interviewees understood the human resource skill mainly reflects on the restructuring of the middle leaders and different level staff, as well as guiding

people to realize the goal of the NewU. With respect to the selection and appointment of new middle level leaders, an institutional leader mentioned:

> "In our merger experience, we found it was very difficult to adjust internal leaders. For example, we had made the criteria and requirements for all middle level administrative positions, so that we only followed these principle to adjusted middle level leaders. In the practice, we could not always follow up these requirements, in order to avoid more struggles between two pre-merger institutions. We had to base on the principle that we did all best to be the right person taking right positions, at the same time, we had to retain the balance between two parts. (L1)

Within the merger situation, the leader (L1) believed it was the better solution that followed up the "balance" principle since the tension between two parts. With respect to the appointment of new middle level leaders, the rest interviewees mentioned other Chinese merged universities also utilized the principle of "retaining the balance". As we know all the faculties and administration departments normally have two main leaders in Chinese universities: one dean/directors and one branch general secretary of Chinese Communist Party, they also have a number of vice directors or branch general secretaries. The principle of "retaining the balance" means, in a faculty, if the dean / director came from University A, then the branch general secretary of Chinese Communist Party normally came from University B. These interviewees believed that the institutional leader group had tried their best to take care of all leaders who had the senior positions in the original institutions. However, the challenge was that the total numbers of positions had to be reduced. Although they set up some departments and units in the new university, but in NewU, there were almost 40-50% middle level leaders lost their administrative titles and positions.

Through the interview, some interviewees also recognized that some institutional leaders were favorite their previous colleagues and against others sometimes, because they were influenced by "*Renqing*" (emotion) and "*Guanxi*" (relationship or network). In addition, during the merger, some different interest groups formed among the pre-merger institutions. As the institutional leaders, sometimes, were also influenced by these different interest groups. Therefore, it was challenge for the institutional leader group to restructure the human resource. The arrangement of the middle level leaders was a very significant challenge for the institutional leader group in the merger process.

During the interview, some interviewees mentioned that they recognized that negotiation and communication between institutional leader group and staff community was insufficient. They also heard a lot of voices that the staff didn't

think institutional leaders cared the people enough. One leader mentioned during the interview,

> "The personal arrangement was a sensitive issue in the merged university. We were real headache when we made a decision, since we had to consider so many external factors rather than the certain position requirements. It was even difficult to get the agreement within institutional leadership group, and really took energy and time, which also led to we do not have enough time to communicate with internal society".(L4)

Another negative point presented by a vice institutional leader on the principle of "Five Unifications", he mentioned that the "Five Unifications" led to the whole university governance was more centralisation. The universtiy did not give the enough power to the middle level leaders, which also led to institutional level leaders had to always work on the detail for all matters, which increased the workload of institutional leaders. On the other hand, the middle level leaders' working motivation and enthusiasm was influenced.

In addition, as above section discussed, the strategy and implementation plans were not very clear which led to the common staff and middle level leaders emerged the feelings that the future is uncertain and unsafe. This kind of effect led to the need of individual could not fit the needs of the NewU's development. This was really influence the efficiency and effectiveness of the merger.

Political perspective

From political frame, in Bolman and Deal's reframing theory (Table 1 and 2), an organisation is seen as a jungle. The central concepts are power, conflict, competition, and organizational politics. The basic leadership tasks include bargain, negotiate, build coalitions and manage conflict. All interviewees recognized that they followed a political leadership style in the restructuring. According to the interviews, the different leader gave the different understanding regarding political skills. They recognised the political struggles were one of the major challenges in the merger process. The conflicts mainly reflected some of the sensitive areas which include the new name of university, the allocation models of the financial and other resource, personnel position arrangement, and so on. With the two universities merged, the people from pre-merger institutions formed themselves into various interest groups. The new university received some extra government funding, but compared with the cost of restructuring the new university, these resources were insufficient. With regard to

the allocation of resources, there even existed a struggle within the institutional level leaderships. As some interviewees told to the author during the interview,

> "In the beginning period of the merger, due to the financial situation were different between two original universities,, some faculties were rich, some were poor, therefore, the allocation mechanism of the bonus and income for the staff were different both institutional and faculty levels in two pre-merger institutions. After the merger, the university issued the new policy to ask all resources put together. In the financial aspect, there existed a lot of conflicts." (L1)

> "As for the merger, although we received the extra funding from both central and local governments, however, it was insufficient to fix the need of the restructuring. The scare resource was one of major reasons that led to the political struggle." (L3)

Concerning the human resource arrangement, especially for the middle level leaders' positions as the last section discussed, it was really hard job for the top level leaders. These interviewees recognized that there were some political struggles both institutional and faculty levels. Some interviewees also recognized that the decision making followed a "top-down" model, which led to they didn't have enough negotiation and communication with middle level leaders and academic communities. The lack of the openness and transparency led to the rumor and unofficial message spread in the campus, which increased the conflicts. The "retaining the balance" principle on the appointment of leaders both institution and faculty levels, in a way, enhanced the confrontations when the opinions were different between these leaders who were from different pre-merger institutions. All the interviews thought that the political conflict (power struggle) had existed a very long term. Therefore, they thought that the power struggle was a key factor that has been influencing the integration of the merger in the long-term.

Symbolic perspective

In Bolman and Deal's theory, they see the organisation as a theater or temple. As table 1 shows that the central concepts include culture, meaning, ritual, ceremony, heroes, etc. In this frame, Boman and Deal think the leaders should have the skills as prophet or poet. In this case university, these interviewees could not give a clear answer regarding using the symbolic style in the restructuring process, and did not talk they belongs to charismatic leadership or not. When the author directly asked

interviewees about their personal leadership skills from the symbolic perspective, some of them recognized they only occasionally use, but not often. From other hand, an interviewee mentioned that the two main leaders (rector and general secretary of Chinese Communist Party) came from two pre-merger institutions. University A's staff was not familiar with the leader who came from University B, form other side, it was the same. Therefore, none of them could be accepted as the core of the leadership group from the whole internal society, which led to two top leaders were not easy to become the charismatic leader. The topic of the interviews had to mainly concentrate on the building new culture, vision, and so on. A leader mentioned,

> "In the value and vision perspective, of course, we always promoted our value and vision of the merger. The purpose is to establish "the world class university". If we do so, everybody can get benefits from that. However, with the uncertain and unsafe situation, most of staff only paid attention to immediate interests, which influenced the leadership effectiveness" (L2)

Another leader mentioned that their strategic plan just followed up the government documents and fitted governmental requirement. Some contents were too general and not feasible. In point of view, some interviewees were emphasis on the main reason was that the preparation period was too short. Therefore, they did not have a reasonable strategic development plan and a clear implementation plan, which led to most of followers were not very clear about the vision and value of the merger. Even some people did not care about it. Most of staff only consider self-benefit and their own group interests, such as the job safety, their income increasing or reducing. In a way, the most previous middle leaders mainly considered their positions after the merger. As for the institutional leaders group had paid a lot of attention to encourage people, but the effect was not very positive sometimes. These interviewees recognized this was a challenge for the institutional leaders group.

An interviewee (L1) gave the comments on the culture issue. He mentioned that the big challenge for them was the identification problem. The main reason was since NewU merged from two strong universities that owned a long history and good reputation in China. Each one had its culture, identity, beliefs, which were no easy to integrate. According to Boman and Deal's reframing theory, as institutional leaders, they should consider this perspective, unfortunately, the author got the feeling that the leaders' decisions always followed up the certain policies and rules, and ignored the impact of culture on the integration of the new university. Therefore, we can get conclusion that the symbolic skills were not popularly used by these top leaders.

Conclusions

1) From above finding and discussion, we can generalize the challenges that have been facing for the institutional leadership, they include: from *structure* perspective, the merger process of the NewU followed the government's decision, the relevant decision making was "Top-down" manner; the new institutional leadership group also followed this manner on decision making within university, some institutional leaders recognized that the negotiations and communications with the internal society were insufficient. These had influenced the motivation of staff, and they were not satisfied with some new policies and rules. The identities of two pre-merger institution influenced they accepted the new name of the merged university; the pre-merger phase was too short led to the NewU did not design a reasonable strategic plan and a clear implementation plan, which increased the complex and difficulty of the merger process. From *human resource* perspective, these institutional leaders recognised that human resource restructuring was a major challenge in the merger process. In particular, the appointment and selection of the new middle level leaders were a major challenge. Due to the lack of the negotiation and communication between institutional leaders and middle level leaders, as well as the lack of openness and transparency, the followers felt that the institutional leadership was not caring them enough. From *political* perspective, because of the scare resources, the re-allocation of the finance and other resource led to the conflicts between two parts. The principle of the "retaining balance" on the appointment both institutional and middle level leaders led to the power struggles during the decisions or policies making among the different interest groups. From the *symbolic* perspective, due to the leaders did not pay attention to the symbolic skills. The promotion on the new merged university' vision, ceremonies, heroes, etc. were ignored, which influenced to create the new culture and new identity of the merged university. The result of this study shows that perhaps some institutional leaders have insufficient leadership skills. They need to learn from the multi-frame notions to deal with the merger complex situation, so that they can increase their leadership skills more effectively.

2) Implication: the leaders in other countries and in other universities that are planning mergers or who are implementing mergers can learn something from the experiences of this Chinese case university. This study can be as a reference for others to avoid some of the conflicts, and to enable the merger process to flow more smoothly. Some institutional leaders also can learn from Bolman and Deal's reframing theory in order to embrace the multi-frame view for managing emerging conflicts during mergers between pre-merger institutions.

Appendix:

Form S-4

Your name:_____

LEADERSHIP ORIENTATIONS (SELF)[1]

This questionnaire asks you to describe your leadership and management style.

I. **Behavior**

You are asked to indicate *how often* each of the items below is true of you. Please use the following scale in answering each item.

1	2	3	4	5
Never	Sometimes	Always	Occasionally	Often

So, you would answer '1' for an item that is never true of you, '2' for one that is occasionally true, '3' for one that is sometimes true of you, and so on.

Be discriminating! Your results will be more helpful if you think about each item and distinguish the things that you really do all the time from the things that you do seldom or never.

1. _____ *Think very clearly and logically.*
2. _____ *Show high levels of support and concern for others.*
3. _____ *Have exceptional ability to mobilize people and resources to get things done.*
4. _____ *Inspire others to do their best.*
5. _____ *Strongly emphasize careful planning and clear time lines.*
6. _____ *Build trust through open and collaborative relationships.*
7. _____ *Am a very skillful and shrewd negotiator.*
8. _____ *Am highly charismatic.*
9. _____ *Approach problems through logical analysis and careful thinking.*
10. _____ *Show high sensitivity and concern for others' needs and feelings.*
11. _____ *Am unusually persuasive and influential.*
12. _____ *Am able to be an inspiration to others.*
13. _____ *Develop and implement clear, logical policies and procedures.*
14. _____ *Foster high levels of participation and involvement in decisions.*
15. _____ *Anticipate and deal adroitly with organizational conflict.*
16. _____ *Am highly imaginative and creative.*
17. _____ *Approach problems with facts and logic.*
18. _____ *Am consistently helpful and responsive to others.*
19. _____ *Am very effective in getting support from people with influence and power.*
20. _____ *Communicate a strong and challenging sense of vision and mission.*
21. _____ *Set specific, measurable goals and hold people accountable for results.*

1.

22. _____ *Listen well and am unusually receptive to other people's ideas and input.*
23. _____ *Am politically very sensitive and skillful.*
24. _____ *See beyond current realities to generate exciting new opportunities.*
25. _____ *Have extraordinary attention to detail.*
26. _____ *Give personal recognition for work well done.*
27. _____ *Develop alliances to build a strong base of support.*
28. _____ *Generate loyalty and enthusiasm.*
29. _____ *Strongly believe in clear structure and a chain of command.*
30. _____ *Am a highly participative manager.*
31. _____ *Succeed in the face of conflict and opposition.*
32. _____ *Serve as an influential model of organizational aspirations and values.*

References

Bolman, L. G., & Deal, T. E. (2008). *Reframing organizations: Artistry, choice, and leadership* (4th Ed. ed.). San Francisco: Jossery-Bass.

Bolman, L. G., & Gallos, J. V. (2011). *Reframing academic leadership*. San Francisco: Jossery-Bass.

Cai, K. Y. (2002). The administration and coordination of relationship on merged university. *Chinese Higher Education Research, 5*, 21.

Carlson, B. E. (1994). Presidential leadership and the mutual-growth concept. In J. Martin, & Samels, J. E. & Associates (Eds.), *Merging colleges for mutual growth - A new strategy for academic managers* (pp. 59-74). London: The Johns Hopkins University Press.

Chen, A. P., & Luo, J. H. (2000). The mechanism of multi-campus administration. *Education of China Higher Education Institutions, 1*, 27–28.

Chen, H. F. (2001). Three perspective thinking on higher education merger. *Journal of China University of Geosciences (Social Science Edition), 1*, 71–73.

Chen, Y. C. (2002). Discussion on the multi-campus administration in theory study. *Research on Education Tsinghua University, 2*, 59–63.

Chen, Y. C., & Shen, H. (2001). Multi - campus administration. *Research on Education Tsinghua University, 2*, 111–118.

Dai, J. G. (2000). *Promoting the restructuring the higher education system.* Retrieved, from http://www.gmdaily.com.cn/0_gm/2000/05/20000531

Eastman, J., & Lang, D. (2001). *Mergers in higher education: Lessons from theory and experience*. Toronto: University of Toronto Press.

Fielden, J., & Markham, L. (1997). Learning lessons from mergers in higher education. (). London: Commonwealth Higher Education Management Service (CHEMS).

Fledler, F. E. (1971). Validation and extension of the contingency model of leadership effectiveness: A review of the empirical findings. *Psychological Bulletin, 76(2)*, 128–48.

Goedegebuure, L. (1992). *Mergers in higher education: A comparative perspective*. Utrecht: Lemma.

Gray, H.,J. (1987). The CEO: Taheover hardball – A tough leader tells how to play the expansion game. *Success, 18*

Green, S. G., & Mitchell, T. R. (1979). Attributional processes of leaders in leader member interactions. *Organizational Behavior and Human Performance, 23*, 429–458.

Harman, G. (1988). Studying mergers in higher education. In G. Harman, & V. L. Meek (Eds.), *Institutional amalgamations in higher education: Process and outcome in five countries* (pp. 1–7) University of New England: Department of Administrative and Higher Education Studies.

Harman, G., & Meek, V. L. (2002). Introduction to special issue: Merger revisited: International perspective on mergers in higher education. *Higher Education, 44(1)*, 1–4.

Hay, D., & Fourie, M. (2002). Preparing the way for mergers in south African higher and further education institutions: An investigation into staff perceptions.*44(1)*, 115–131.

Hipps, G. M. (1982). Summary and conclusions. *New Directions for Institutional Research, 1982*(33), 115–122.

Kyvik, S. (2002). The merger of non-university colleges in Norway. *Higher Education, 44(1)*, 53–72.

Li, D. (2004). *Mergers in Chinese higher education in the1990s.* (Unpublished Thesis). University of Oslo, Oslo.

Li, D. (2010). Exploring the integration of merged Chinese higher education institutions in management and leadership dimension. In T. P. Gregory, & P. Nicholas (Eds.), *Problems and prospects in higher education* (pp. 195–208). Athens, Greece: Atiner.

Li, D. (2011). Mergers of higher education institutions in china and Finland. In Y. Z. Cai, & J. Kivistö (Eds.), *Higher education reforms in Finland and china: Experiences and challenges in post-massification era* (pp. P.225-P.243). Tampere: Tampere University Press.

Li, D., & Kohtamäki, V. (2011). *Leadership styles in a merged higher education institution: A case study comparing china and Finland. Paper presented in EAIR conference, Poland, Warsaw.* Unpublished manuscript.

Martin, J., & Samels, J. E. (1994). Achieving academic excellence through strategic mergers: A new approach. In J. Martin, & Samels, J. E. & Associates (Eds.), *Merging colleges for mutual growth- A new strategy for academic managers* (pp. 3–21). London: The Johns Hopkins University Press.

Meek, V. L. (1988). Notes on higher education mergers in the united kingdom. In G. Harman, & V. L. Meek (Eds.), *International amalgamations in higher education: Process and outcome in five countries* (pp. 159–170). University of New England: Department of Administrative and higher education studies.

Millett, J. D. (1976). *Mergers in higher education. an analysis of ten case studies*. Washington, D.C.: Academy for Educational Development, Inc.

Pang, Q. S., & Zeng, J. (1999). The integration of discipline – the final target of the merger. *Research on Higher Education, 4*, 50–53.

Peterson, M. W. (1982). An outsider's view: Prelude, interlude, or postlude. *New Directions for Institutional Research, 1982*(33), 123–130.

Shen, H., Chen, Y. C., & Liao, X.Y. & Luo, Y. (2001). Research on multi-campus administration. *Journal of Higher Education, 8*, 63–71.

Sitkin, S. B. &. P., A.L. (2004). The leadership and the M&A process In Pablo, A.L. & Javidan, M. (Ed.), *Mergers and acquisition: Creating integrative knowledge* (pp. 181–193). Oxford, UK: Blackwell Publishing.

Skodvin, O. J. (1999). Mergers in higher education - success or failure? *Tertiary Education and Management, 5(1)*, 65–80.
Vuori, J. (2011). *Leadership frames of program directors at Finnish universities of applied science.* (Doctor dissertation, University of Tampere).
Wan, Y. M. (2008). *Managing post-merger integration, a case study in merged Chinese higher education institutions.* University of Michigan).
Wang, P. J., & Tang, A. G. (1997). The situation, problems, and solution of shanghai higher education institutions merger. *Research on Higher Education, 5*, 30–33.
Xia, Z. X. (1998). The impact of the mergers of higher education institutions in economics. *Chinese Higher Education Research, 3*, 21–23.
Yin, J. L., & Dai, S. X. (2000). The theoretical thinking on the mergers of higher education institutions. *Henan Social Science, 4*, 85–88.
Zeng, X. H. (2000). Economic analysis on the mergers of higher education. *Journal of Nanjin University of Economics, 5*, 8–11.
Zhou, Y. Q. (2001). The reform and innovation of higher education system. *China Higher Education Research, 1*

Comparative perspectives and cooperation between the two countries

Chapter 18

Theoretic-methodological considerations for comparing the Chinese and Finnish higher education systems

Johanna Kallo

Introduction

In comparative education studies, the researcher is challenged with the question of how the research units should be selected and how the selection should be justified. Should the comparison units be naturally compatible, in some respects similar units, such as the Nordic education systems, or should they be very different in terms of volume, such as the education systems of China and Finland? How many units is an "appropriate number" for a comparison? Is comparison a suitable method for studying systems that are very different from each other or very similar to each other? Is comparison even possible in the age of globalisation when the requirements of global competitiveness make national higher education systems more similar to each other? If one wants to compare higher education systems despite globalisation, how can global and other external influences be excluded from the comparison of national systems? Or is it even possible to minimise the global effects?

The aim of the present article is to find answers to these questions. The basic theme of the paper is to examine how the common paradigms developed in the field of comparative education can be applied to a comparison of the Chinese and Finnish higher education systems. During recent decades the higher education policy cooperation between the two countries has become closer and produced mutually valuable information on the development of the higher education systems

of these countries (Cai & Kivistö 2011). This has also increased interest in methods that could be applied to a systematic comparison of the countries' higher education systems.

The article is divided into three sections. The first section examines the types of research in comparative education and investigates how the comparison of the Finnish and Chinese higher education systems relates to them. Next, the key methods of comparative education are briefly described, and consideration is given to how different values and the cultures manifesting them should be taken into account in a comparative study of higher education systems. The third section of the article finds answers to the questions presented above and considers the challenges and possibilities of comparative research on a more general level.

On the types of research in comparative education

Comparative education studies are carried out when the aim is to deepen the analysis of the subject of study – i.e., to examine the diffusion, reasons and causal relationships of the phenomenon studied. In the background there is often the notion that, through comparison, it is possible to detect common trends and thus anticipate the future (Phillips & Schweisfurth 2011).

Comparative studies can be carried out using several different methods. Statistical comparisons are explanatory in nature, and the aim in such studies is to find and outline the most common, universal development trends and interpretive schemas (Theisen & Adams 1990). Comparative research is often regarded as a special discipline outlining broad trends, as described above, but it can also be used for documenting phenomena that are difficult to generalise. In such cases, the analysis is idiographic and the researcher aims at making singular observations of the research subject (Phillips & Schweisfurth 2011; Arminen & Alapuro 2004). In such a manifestation, comparative research approximates ethnographic studies (Gordon & Lahelma 2004). At present, comparative studies are widely carried out outside the so-called academic basic research. In such cases, the aim is, for example, to evaluate the applicability and cost-effectiveness of certain units (Theisen & Adams 1990).

There are several classifications of comparative education studies. One method is to examine the approach to theory and empirical design. Studies focusing on one single country or area often emphasise empirical design (single-site studies), while studies examining more than one country or area often aim at building new theories (theoretically informing comparative studies) (Broadfoot 1999).

Comparative studies can also be categorised according to the number of cases selected for the study. Contrary to common belief, the majority of comparative research focuses on one single case (one-case studies). It is justifiable to call a one-case study comparative if the researcher is testing the research subject and linking it as part of a wider comparative theoretical framework. By doing this, the research subject is compared to several earlier cases on the basis of which the theory is formulated (Peters 1998). Comparative studies of two units of research or small groups (small n) have also gained popularity in academic publications. Often, the reason behind the selection of a small number of research units is the scarcity of resources. Comparisons of the so-called natural groups have become more popular in Finnish sociological and education studies. These refer, for example, to small-group (small n) comparisons between countries in which the social structures are considered relatively similar. Traditionally, the Nordic countries are considered to form such a natural group. Generally, a comparison of natural groups is relatively simple to perform because the distances between the research subjects are quite short and the academic cultures seem uniform. However, such comparisons are often affected by the so-called Galton's problem. In practice, this means that when comparing very similar higher education systems, the researcher must carefully consider which parts of the uniform systems have developed independently within the systems (endogenously) and which are a result of the reciprocal interaction between the systems. Global comparisons are the most extensive type of comparative education research in terms of units of research. Such comparisons are often carried out by international organisations, the member countries of which have commissioned them in order to perform international statistical comparisons (Goldthorpe 2007; Peters 1998). An example of such global higher education evaluations is the upcoming (bachelor-level) Assessment of Higher Education Learning Outcomes (AHELO) coordinated by the OECD.

In the field of comparative higher education studies, the types of research are categorised somewhat differently than in comparative education studies. Studies of the higher education systems of different countries have been classified based on the method of compilation and analysis of the data used in the comparison. The first category contains, for example, European studies that are based on already existing data. The second category contains studies in which the analysis is based on freshly compiled data (Välimaa 2008). In addition, comparative higher education studies have been categorised based on their subject. Studies have been conducted on different countries' curricula, students and other phenomena, such as how various higher education policy models and practices are disseminated between countries (Altbach 1985). Furthermore, comparative higher education studies can focus on a review of

the higher education systems of certain areas or countries. In such cases, the objective is to present a so-called thick description of the systems. In contrast, there are also comparisons focusing on a certain theme (thematic studies). Such studies discuss a pre-determined theme through a cross-section of more than one target country (Välimaa 2008). According to Teichler (1996), the strength of comparative higher education policy research lies in the fact that this type of research often contributes to theoretical concept development based on comprehensive sources of data. Studies with comparative approach enhance our understanding of international trends, different types of higher education policy reforms, transnational higher education policy activities and the partial integration process taking place at the supranational level.

The publication traditions of comparative education and comparative higher education studies differ from each other materially as well. Even as late as the 1990s, the majority of the higher education comparisons published in Western countries (e.g., Clark 1993 in Hayhoe 2007) focused on a comparison of Western higher education systems, with the exception of Japan. The emphasis on higher education comparisons was in the comparison of structures, power structures and types of higher education. Cultural comparisons between the higher education systems of different countries were scarce. It was common that articles about the higher education systems of socialist countries were published in journals within the field of comparative education instead of journals on higher education. The collapse of the Soviet regime at the turn of the 1990s and the increased cooperation between East and West balanced this division of labour between the two research fields (Hayhoe 2007).

Based on the number of the units of research, the comparison of the Finnish and Chinese higher education systems can be considered a so-called binary comparison of two cases. When the case concerns two higher education systems that are very different in nature, it can be questioned whether, in terms of research, it is meaningful to examine the differences in the systems instead of analysing the similarities between these mutually very different systems (*cf.* Peters 1998). When selecting two very different cultures or countries as research subjects, it seems meaningful to investigate what in the political or cultural backgrounds of the selected countries is sufficiently similar to explain the similarities in their education systems (*cf.* Skocpol 1984). Furthermore, when the subjects of a qualitative comparison are two national level units with very different cultural backgrounds and volumes of students, it can be questioned whether it would be logical to select research units smaller than the national level, such as institutions, political processes, or policies, or units even smaller than these, such as curricula or higher education policy models (*cf.* Peters 1998).

In principle, two cases can also be examined on a statistical basis. Statistical comparison of two very different systems (most different systems) means that the variables selected for the comparison of the two systems can also cause a great variance in the dependent variables. Provided that the variance between the dependent variables is significant enough, conclusions can be drawn. The problem in a statistical comparison of two countries is that in the comparison of two systems, the share of the independent variables is great and, consequently, the share of the dependent variables is small, which impedes making generalisations covering areas other than exactly the two units studied (Peters 1998).

As a conclusion of this section, it can be stated that comparison *per se* is never the objective of research but rather a way of finding answers to the questions presented in the study. Comparative research should not be applied in situations where comparison will not provide the answers to the posed research problems. When it can be established that comparison is a suitable way of finding answers to the research problems and a comparative study to be performed, understanding the above-described types of research helps the researcher to situate his or her work as part of the comparative research tradition. One requirement of the comparison is that the researcher must be able to evaluate which type of comparison is suitable for which research problem. In addition, the selection of the units of research is another critical stage of a successful comparative education study. It is technically possible to carry out a comparison of two very different higher education systems, but that requires the researcher to have a deep understanding of what types of principles should be considered in the comparison of the two units of research. For example, Aarrevaara (2011) aptly points out that academic units in Finland are not identical to those in China, which poses a challenge to compare the contents of the academic professions in these countries. Finally, following the technical principles of comparative research and fine-tuning them guarantees a successful research design, but in the data analysis stage, questions arise about how the cultural differences between the target countries or areas should be considered. This issue is discussed in more detail in the following sections.

On the methods and cultural approach of comparative education

From historical-philosophical analysis to synthesis of methods

The stages of the methodological development in comparative education are traditionally categorised as historical-philosophical approach, social empiricism and the synthesis of the two approaches.

One cornerstone of the methodological development in comparative education is Sir Michael Sadler's (1900) speech "*How Far Can We Learn Anything of Practical Value from the Study of Foreign Systems of Education?*", which is regarded as a classic among the comparative education researchers. According to Sadler, comparative education scholars should consider the historical factors behind the education systems of different countries. Each nation has its own *ethos*, its national spirit, which renders it impossible to borrow the systems from one culture to another. Foreign education systems can of course provide the inspiration to improve a nation's own system. If the historical factors affecting the education system are known, the system's operation is easier to understand, steer and control. According to Sadler, the society around the schools, educational establishments and universities is just as important a subject of comparative research as what is taking place within such institutions.

Sadler's approach was historical-philosophical. This approach was preferred in the field of comparative education until the early 1960s, when Nicholas Hans (1967) developed the functional-analytical approach as a solution to deepen the historical-philosophical approach. According to Hans, national *ethos* does influence education systems, but education also influences the national character. The factors affecting the national character form the framework for comparative education studies. These factors include the so-called natural factors (such as language and geography), religious factors (such as Christianity, Islam, Hinduism, Taoism and Buddhism) and secular factors (such as humanism, socialism and nationalism). According to Hans, the study of national systems separately against their own historical framework, following the development of the national character and culture, is the main task of comparative research. After this, data should be collected on the governance, structure and performance of other countries' systems (See also Raivola 1984).

The historical-philosophical approach became increasingly criticised after the late 1960s. The critics regarded the approach as an insufficient research method to satisfy the needs of the expanding education system, and the comparisons based on intuition were seen as questionable. According to the critics, intuitive reviews only offered hypotheses and insights, which required scientific testing. It was also considered that the historical-philosophical approach was "looking in the wrong

direction" – using the approach it is possible to interpret the development of the existing education systems, but can the past be interpreted in the present environment? (*cf.* Raivola 1984).

The criticism of the historical-philosophical approach led to another stage in comparative education, which can be called the era of social and methodological empiricism. The comparative research carried out during this period was steered by the notion that research methods and tools, such as surveys, observation techniques, interviews, exact indicators and control statistics, supporting the making of prognoses and control are required for overall education planning. Comparative education's purpose became investigating the tasks of education systems and the effect of these systems within different communities. To achieve this goal, measurable variables were isolated from education systems and the functional correlations between them were studied. The rise of social empiricism was largely based on the breakthroughs within the field of natural sciences and the idea that such methods can also be applied to comparative education. The concept of covariation became the foundation of comparison (*cf.* Raivola 1984). One of the most significant books of the era was Harold Noah & Max Eckstein's *Toward a Science of Comparative Education* (1969), in which the authors argued on behalf of rejecting qualitative data and adopting a hypothetical-deductive approach and quantifying education-related phenomena into statistical relationships.

At the turn of the 1980s the faith in social empiricism became diluted due to the global economic crisis and disappointment in the requirements set for scientific research. The findings about the chaos theory made in the field of quantum physics affected the social scientific thinking. At the same time, the cultural change made the researchers sensitive about the problem of comparison. This meant a more conservative approach to comparing cases distant from each other because it was difficult to find common and comparable concepts for them (Mattheou 2009).

During the 1980s, the historical-philosophical approach and social empiricism started to converge. Lauterbach & Mitter (1998) have described this change as an attempt to harmonise the hermeneutical and empirical-analytical approaches. Here, the hermeneutical approach refers to aiming at understanding the subject of study through interpreting text and through historical research. The research material often includes documents, legislation, curricula, schoolbooks and other literature. The empirical-analytical approach is understood as trying to provide explanations and to control, predict, and test hypotheses with the aid of research data. In practical research, the merging of these two research methodologies is reflected in the fact that qualitative studies partly utilise the same methodological tools as quantitative studies, such as questionnaires and structured interviews. Juxtaposition between

qualitative and quantitative methods has become diluted, which can be seen in the increasing popularity of interdisciplinary approaches (Boeije 2010).

The dialogue between qualitative case studies and quantitative multivariate methods has continued through the 1990s and 2000s. For example, Goldthorpe (2007) has reservations about the inductive approach and theory formulation of qualitative case studies. According to Goldthorpe, several problems that are typical in quantitative research are also commonplace in case studies. One such problem is the so-called small n problem, which means that when studying a relatively small number of cases and the characteristics thereof, the inevitable result is that nearly all the characteristics seem to affect the case under study. In addition, according to Goldthorpe, the Galton's problem referred to in the previous section applies to both qualitative and quantitative studies. The units selected for a comparison are often assumed to be independent, when in reality they are products of a cultural diffusion. The continuous challenge in statistical research, the black box problem, also applies to qualitative research. Studied variables easily become the agents of change, and the risk for the study is that social processes are not considered to an adequate extent (*Ibid*). There have been various attempts to dilute the methodological divide since then. For example, Charles Ragin's (1987) Qualitative Comparative Approach (QCA) method (later 'fsQCA') combines case studies and variable-focused research. A systematic review of cases enables finding the combinations of the few factors that are necessary and adequate in terms of achieving certain results.

Comparison of Chinese and Western higher education systems from the cultural perspective

The stages in the methodological development of comparative education briefly described above have been reflected in comparative studies of Chinese and Western higher education systems. The present subsection in particular focuses on what the historical-philosophical tradition has to offer to the study of the Chinese and Finnish higher education systems. The special attention is paid on the notions of 'Chinese culture' and 'Nordic social-democratic welfare state model' and the world culture theory and its critique.

In her recent essay, Ruth Hayhoe (2007) analyses the formation of the Chinese culture as a type of historical layer. After the 1949 Revolution, the communist policies were integrated into the country's traditions. Over decades, these trends developed into the Chinese culture, clearly distinguishable from other cultures. One central element of the Chinese culture is the traditional Confucian philosophy,

which emphasises the respect for authority, collectivity, and the hierarchical society, and set the society's interests before the individual's interests. Since the economic reforms started in 1978, the socialist market economy[1] has influenced the Chinese culture and created pressure to move towards a more individualistic approach, in which individuals are entitled to pursue their personal goals and merits (Bush & Qiang 2002). This is echoed by Lee & Pang (2011), who state that especially China's joining the World Trade Organization (WTO) affected the tasks of the education administration in the 2000s. The WTO membership has required China to issue foreign operators with restricted entrance to the Chinese higher education markets. Furthermore, it has required the country's education administration to adopt new operating practices in the environment of conflicting ideologies. The earlier leadership principles, such as reciprocity and cooperation, are being replaced by the concepts of efficiency and accountability. Hayhoe (2007) provides an interesting description of her comparative higher education policy research regarding the higher education systems of China and the Western countries, particularly Canada. The opening of China to the outside world since the 1980s has had a significant impact on the increase in research material, promoted the emergence of a dialogue between Canadian and Chinese scholars, and made the available data compilation methods more versatile. The studies of the Chinese higher education system and its history from the Cultural Revolution era were based on written sources, but after the opening of the country, the data sources became more varied. For the comparison of the Chinese and Western higher education systems, Hayhoe has applied the so-called ideal types and narrative research approach by Max Weber (1954), later developed further by Brian Holmes (1981). By ideal types, she refers to "an attempt to analyze historically unique configurations or their individual components by means of genetic concepts". The goal of the research of ideal types is to find the key values affecting the cultural systems, and simultaneously, the higher education.

According to Hayhoe's (2007) interpretation, "humanising modernity" is one of the main values steering the modern Chinese higher education system and its modernisation goal. "Humanising modernity" is part of the 15th century Neo-Confucian scholar Wang Yangming's School of Heart philosophy (*xinxue*), which combines Taoism and Buddhism. This approach inspired the writings of the Republic of China era educationalists in the first half of the 20th century and can also be identified in

1. Here, the term 'socialist market economy' refers to the reformation of 1993, when the concept of 'centrally planned economy' was replaced by the concept of 'socialist market economy' in the Chinese Constitution (Finpro 2010). Socialist market economy is an economic system in which the Party and the Government affect the open-market economy (*cf.* Ministry of Foreign Affairs 2011).

the research on China's most famous modern-day comparative education scholar Professor Gu Mingyuan (Gu 2001 in Hayhoe 2007).

When examining the Finnish society and the values affecting it, researchers often refer to the Nordic social-democratic welfare state model, in which the system emphasises the transfer of funds and all citizens have equal access to the welfare services (*cf.* Esping-Andersen 1990). The Finnish higher education market remains closed to international operators, and there are practically no private corporations within the sector. Until 2009, universities were State-governed bodies, after which they became either public universities or foundations primarily funded by the State. To a large extent, the education administration remains centralised, even though there have been attempts to relax the steering system. In accordance with the requirements of welfare societies, higher education is free of charge and there is a relatively comprehensive university network in the country (Rinne 2010). However, the recent structural reforms in the higher education sector are transforming the system, which reflects a change in the values affecting the system (*Ibid*; Kallo 2009; Vanttaja 2011).

Considering cultural perspectives is perhaps one of the most challenging tasks in comparison. The effects of the Chinese culture on the higher education system of China and the social-democratic welfare society reflected in the higher education system of Finland were outlined above. But to what extent can generalisations be made based on the "Finnish" or "Chinese" higher education systems? No national education system is a homogeneous unit; it is formed of different regional parts (*cf.* Dale 2000).

Some theoretic-methodological questions related to a binary comparison of the most different higher education systems were addressed earlier in this paper and include, for example, the questions of whether two different national education systems should be compared at a national level or whether it would be more logical to select smaller units of research, the commensurability of which is easier to identify. The most recent comparative education studies seem to support the latter alternative because education is local and linked to the local and regional practices, and because the concept of 'education' is understood differently in different local contexts (Dale 2005). Many of the comparative education research subjects are no longer "national" in the age of globalisation and manifest differently in local contexts and extend over national borders. Thus researchers should avoid the so-called methodological nationalism, which means selecting the nation state as an obvious unit of research (*Ibid*).

Over the last three decades there has been a wide debate on the so-called world culture and world polity theories within the field of comparative education. Accor-

ding to these theories, national education systems reflect more of the world culture that emerged from European modernism than their national origins (Meyer et al, 1997). The establishment of some of the Chinese universities on the basis of European university models at the beginning of the 20th century and the Humboldtian operation model adopted by the Finnish universities seem to provide historical support for this argument.

The world culture theory (Meyer et al., 1997) has received increasing criticism in recent years. According to the critics, the theory is superficial and based on scarce empirical evidence and does not sufficiently consider the local differences (Dale 2000; Schriewer 2000). Another fundamental weakness of the world culture theory is the fact that it assumes that European modernity is the strongest factor influencing the education systems, when in reality, economic factors determine the policy boundary conditions in the age of globalisation. Dale (2000) asks what exactly is changing into something more homologous – the process, the results or both? Cultural differences between different education systems, however, seem to remain significant. For example, the leadership cultures in Chinese schools, educational institutions and universities differ materially from the Nordic practices (Finnish National Board of Education 2012).

It has been debated that globalisation affects national education systems more strongly than European modernity (Dale 2005) and that the basic premise of the world culture theory, modernity, has reached the end of its journey. For example, Boaventura de Sousa Santos has stated that the age of modernity has ended without the majority of humankind ever having been affected by the values represented by modernism (de Sousa Santos 2004 in Dale 2005). Dale (2000) proposes that instead of the world culture theory, researchers should seriously consider how the economy regulates education in this age of globalisation. According to Dale's Globally Structured Agenda for Education paradigm, globalisation has a material effect on the education policy in the 21st century. The signs of change include hyper-liberalism, consumerism and governance without government. Instead of a world culture somehow standardising education systems, the education reforms are regulated by the operating principles of the capitalist market economy system, which ultimately comes down to the pursuit of profit. Nation States' ability to control the global economy has weakened while transnational corporations keep increasing their influence. Multinational organisations such as the EU or the OECD have gained more power in education policy. During the recent decade, the centre of economic world power has gradually shifted from the Atlantic to the Pacific Rim, as result of which three competitive areas emerge, i.e. the North America, Asia and Europe. (Dale 2000.) Competition between higher education institutions between and within these areas

is growing and fuelled among others by global rankings of HEIs. Those rankings, in which China and Finland have not been graded on the top, have generated incentives that favour greater higher education system stratification. (Marginson & van der Wende 2007.)

Challenges and opportunities of comparative education research in the age of globalisation

The position of comparative education as a special discipline of educational studies has strengthened in the last two decades. This has been accelerated by international statistical publications about education, in particular the publications by international organisations such as the OECD and IEA measuring the level of educational achievement. Technological development has facilitated the internationalisation of education and research, which has meant an increasing exchange of information between teachers and researchers, and ultimately made the compilation of data on other countries' education systems technically easier compared to past decades. The ending of the Cold War extended the comparative education field to countries on which there was scarce information available prior to the collapse of the Soviet regime.

The role of comparative education in this reformed field dominated by international organisations has been challenging because in order to balance the extensive indicator publications, the academic comparative education studies have been expected to produce a critical view and additional information about the massive statistical reviews produced by international organisations. The hope is that the qualitative comparative education studies focusing on more restricted units of research will deepen the understanding about the systems in place in the target countries or cultures and about their backgrounds. In other words, comparative education is expected to go further from the point where the explanatory power of statistical reviews ends. However, the problem here seems to be the fact that critical comparative education studies cannot produce research that satisfies these expectations on the discipline in a meaningful manner due to scarce resources. Another challenge is that the comparative education discipline is becoming more restricted and reactive. This means that instead of producing and determining its own subjects of study, comparative education's interests are pre-determined by various international organisations and their education programmes (*cf.* Cowen 2009).

The above sections of the present article have discussed the types of comparative education research and methods in a conversational manner. Furthermore, the

paper discussed how the comparison of the Chinese and Finnish higher education systems could be viewed against these basic premises. The article also examined how modernity and globalisation affect education systems and the comparison thereof. In the end, it should be asked in what ways do these extensive changes – the end of modernisation and emergence of globalisation – affect the main question in education research, i.e. what are the lessons to be learnt from comparison? If it is assumed that the diffusion of world cultures makes education systems more similar and that globalisation affects education systems' goal setting in a harmonising manner, will education systems eventually become alike and will the comparison of such homologous systems be meaningful in the future?

The convergence and harmonisation of education systems has led the researchers in the field to more intensively examine the processes of policy diffusion and policy transfer. Studying the processes through which different education models are transferred from one context to another provides researchers with an opportunity to analyse how such policies are received and how external models are integrated at the national and local levels. Studies of policy learning, borrowing and diffusion have shown significant local variation, which may result from the fact that local decision makers react selectively to external impulses. Of the external influences, those that favour and legitimate local decision making are often adopted (Schriewer 2000, Steiner-Khamsi 2002). The diffusion and penetration of new governance models of higher education policies are indeed affected by several factors, such as will the new idea be socially authorised, will it solve existing social problems, or will the externally provided model be sufficiently in harmony with the existing models (e.g., Stensaker 2007). Finally, when comparing national higher education systems or parts thereof, attention should particularly be paid on how these systems have reacted to external influences and what kinds of variations these influences have generated in the systems at different levels. This facilitates a deeper understanding of the differences between higher education systems and helps in predicting the systems' future development.

References

Aarrevaara, T. (2011). A Global Profession? – A Comparative Perspective on Academic Work in China and Finland. In Cai, Y. & Kivistö, J. (Eds.) *Higher Education reforms in Finland and China: Experiences and challenges in post-massification era.* Tampere: Tampere University Press, pp. 211–224.

Altbach, P.G. (1985). Higher Education: Comparative Studies. In Husen, T. & Postlethwaite, N. (eds.) *International Encyclopedia of Education*. Oxford: Pergamon Press, pp. 2194–2196.

Arminen, I. & Alapuro, R. (2004). Vertailut yhteiskuntatutkimuksessa. In Arminen, I. & Alapuro, R. (Eds.) *Vertailevan tutkimuksen ulottuvuuksia*. Vantaa: WSOY, pp. 7–22.

Boeije, H. (2010). *Analysis in Qualitatative Research*. London, California: Sage Publications.

Broadfoot, P. (1999). Not So Much a Context, More a Way of Life? Comparative Education in the 1990s. In R. Alexander, P. Broadfoot & D. Phillips (Eds.) *Learning from Comparing: new directions in comparative educational research.* Oxford: Symposium Books, Cambridge University Press, pp. 21–32.

Bush, T. & Qiang, H. (2002). Leadership and Culture in Chinese Education. In A. Walker & C. Dimmock (Eds.) *School leadership and Administration: Adopting a Cultural Perspective.* New York: RoutledgeFalmer, pp.173–187.

Cai, Y. & Kivistö, J. (Eds.) (2011). *Higher education reforms in Finland and China–experiences and challenges in post–massification era*. Tampere: Tampere University Press.

Clark, B. (1993) *The research foundations of graduate education: Germany, France, United States, Japan.* Berkeley: University of California Press. This publication was used as a reference in Hayhoe, R. (2007). The use of ideal types in comparative education: a personal reflection. *Comparative Education 43*, 189–205.

Cowen, R. (2009). The transfer, translation and transformation of educational processes: and their shape–shifting? *Comparative Education*, *45*, 315–327.

Dale, R. 2000. Globalization and Education: Demonstrating a 'Common World Educational Culture' or Locating a 'Globally Structured Educational Agenda'? Educational Theory, 50, 419–427.

Dale, R. (2005). Globalisation, Knowledge Economy and Comparative Education. *Comparative Education, 41*, 117–149.

Esping–Andersen, G. (1990). *The Social Foundations of Postindustrial Economies*. Oxford: Oxford University Press.

Finpro. 2010. Kiina. Maaraportti. Retrieved on July 31, 2012 from http://www.finpro.fi/documents/10304/15931/Chinacountryreport0920194.pdf

Goldthorpe, J. (2007). *On Sociology. Second Edition. Volume 1: Critique and programmes.* Stanford: California University Press.

Gordon,T. & Lahelma, E. 2004. Vertaileva ja poikkikulttuurinen tutkimus. In Arminen, I., & Alapuro, R. (Eds.) *Vertailevan tutkimuksen ulottuvuuksia*. Porvoo: WSOY, pp. 97–110.

Gu, M. (2001). *Education in China and abroad: perspectives from a lifetime in comparative education.* Hong Kong: Comparative Education Research Centre, University of Hong Kong. Used as a reference in Hayhoe, R. (2007). The use of ideal types in comparative education: a personal reflection. *Comparative Education 43*, 189–205.

Hans, N. (1967) *Comparative education.* London: Routledge & Kegan Paul.

Hayhoe, R. (2007). The use of ideal types in comparative education: a personal reflection. *Comparative Education 43*, 189–205.

Holmes, B. (1981) *Comparative education: some considerations of method*. London: George Allen and Unwin.

Lauterbach, U. & Mitter, W. (1998). Theory and Methodology of International Comparisons. In Cedefop (Ed.). *Vocational education and training – the European research field*. Background report, Volume II; Luxembourg, pp. 235–271.

Lee, J. & Pang, N. (2011). Educational Leadership in China: Contexts and Issues. *Frontal Education China, 6*, 331–341.

Marginson, S. & van der Wende, M. (2007). To Rank or To Be Ranked: The Impact of Global Rankings in Higher Education. *Journal of Studies in International Education, 11,* 306–329.

Mattheou, D. (2009). The Scientific Paradigm in Comparative Education. In R. Cowen and A. M. Kazamias (eds.), *International Handbook of Comparative Education*. London/ New York: Springer Science + Business Media, pp. 59–71.

Meyer, J.W. & , Boli, J. & Thomas, G.M. & Ramirez, F.O. (1997). World Society and the Nation–State. *American Journal of Sociology, 103*, 144–181.

Ministry for Foreign Affairs. (2011). Maatiedosto. Kiina. Retrieved on July 31, 2011 from http://formin.finland.fi/public/default.aspx?nodeid=17806&contentlan=1&culture=fi-FI

Noah, H. & Eckstein, M. (1969). *Toward a Science of Comparative Education*. New York: Macmillan.

Finnish National Board of Education. (2012). Kansainvälinen kartoitus rehtoreiden työstä ja täydennyskoulutuksesta. Retrieved on July 26, 2012 from http://www.oph.fi/julkaisut/2012/kansainvalinen_kartoitus_rehtoreiden_tyosta_ja_taydennyskoulutuksesta

Peters, G. (1998). *Comparative Politics.* Houndmills, Basingstoke: Macmillan. 1998.

Phillips, D. & Schweisfurth, M. (2011). *Comparative and international education : an introduction to theory, method, and practice.* London: Continuum Intl Pub Group.

Ragin, C. (1987). *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies.* Berkeley and Los Angeles: University of California Press.

Raivola, R. (1984). *Vertaileva kasvatustiede.*Tampereen yliopisto. Julkaisusarja A.Tutkimusraportti N:o 30.

Rinne, R. (2010). The Nordic University Model from a Comparative and Historical Perspective. In Kauko, J.; Rinne, R. & Kynkäänniemi, H. (Eds.) *Restructuring the Truth of Schooling – Essays on Discursive Practices in Sociology and the Politics of Education. A Festschrift for Hannu Simola.* Finnish Educational Research Association: Research in educational sciences 48. Jyväskylä: Jyväskylä University Press, 85–112.

Sadler, M. (1900). How far can we learn anything of practical value from the study of foreign systems of education? Reprinted in 1964 *Comparative Education Review* 7(3), 307–314.

Santos, B. de Sousa (2004) Interview, *Globalisation, Societies and Education, 2*, 147–160.

Schriewer, J. (2000). Vertailevan kasvatustieteen diskurssin historiallistaminen. In Honkonen, R. (Ed.) *Koulutuksen lumo: retoriikka, politiikka ja arviointi*. Tampere: Tampere University Press.

Skocpol, T. (1984). *States and Social Revolutions: A Comparative Analysis of France, Russia, and China*. New York: Cambridge University Press.

Steiner–Khamsi, G. (2002). Re-Framing Educational Borrowing as a Policy Strategy. In M. Caruso & Tenorth, H.E. (Ed.) *Internationalisierung : Semantik und Bildungssystem in vergleichender Perspektive.* Frankfurt/M: Peter Lang, 57–89.

Stensaker, B. (2007). Quality as Fashion: Exploring the Translation of a Management Idea into Higher Education. In Westerheijden, D. F. & Stensaker, B. & Joao, R.M. (Eds.) *Quality Assurance in Higher Education. Trends in Regulation, Translation and Transformation. Higher Education Dynamics*, *20*, 99–119

Teichler, U. (1996). Comparative higher education: potential and limits. *Higher Education, 32*, 431–465.
Theisen, G. & Adams, D. (1990) Comparative Education Research, in Thomas, R.M. (Ed.) *International Comparative Education*. Oxford: Pergamon, 277–300.
Vanttaja, M. (2011). *Yliopiston villit vuodet : suomalaisen yliopistolaitoksen muutoksia ja uudistuksia 1990-luvulta 2000-luvun alkuun.* Turku: Turun yliopiston Kasvatustieteen laitos.
Välimaa, J. (2008). On Comparative Research in Higher Education. In Amaral, A. & Bleiklie, I. *&* Musselin, C. (Eds.) *From Governance to Identity. A Festscrift for Mary Henkel. Higher Education Dynamics, 24*, 141–155.
Weber, M. (1954) *The Protestant ethic and the spirit of capitalism.* New York: Scribner.

Chapter 19

Towards appropriate strategies for international cooperation with Chinese higher education: the Finnish case

Yuzhuo Cai & Seppo Hölttä

Introduction

In the last two decades, an increasing number of regions and countries in the world have made cooperation with China a priority in their internationalisation strategy, due to the fast Chinese economic development and the important role played by China in the global economics and politics. According to the European Commission, for instance, giving high priority to EU-China relations is not only driven by economic and commercial reasons, but also by a political interest in supporting China's sustainable development and successful transition to a stable, prosperous and open country (Brødsgaard & Lim, 2009; European Commission, 2007). The bilateral social and economic relationships always include a significant education dimension, because education exchange can strengthen the value of cultural ties and create potential mutual business opportunities (OECD, 2004, p. 4). This proposition has been especially shaped by the historical development of relationships between China and the United States of America (USA). The importance of attracting Chinese students for the USA was realised a century ago. In 1906 the president of the University of Illinois, Edwin James, wrote to the American President Roosevelt:

> The nation which succeeds in educating the young Chinese of the present generation will be the nation which for a given expenditure of effort will reap the largest possible

returns in moral, intellectual, and commercial influence… Trade follows moral and spiritual domination far more inevitably than it follows the flag' (Smith, 1907).

While the USA has gained great social and economic benefits through education exchanges with China, the significance of such approach has been only noticed recently in Europe. To achieve the overall objectives in EU's strategy towards China, international cooperation and exchange between Chinese and European higher education institutions have been facilitated by a number of European Union programmes. Meanwhile, alongside the introduction of tuition fees for international students in many European countries, including the traditional welfare states Denmark, Sweden and Finland, China as the biggest education market has also become an important destination for their education export. In general, the European countries' interest in engaging in the internationalisation of higher education in China are concerning students and staff mobility, research and teaching cooperation, and export of education.

Regardless of the objectives, many individual European higher education institutions have experienced many difficulties in working with Chinese partners, and particularly entering the Chinese market. As observed by the Netherlands Education Support Office in China (NESO, 2010, p. 37): "Institutional cooperation (in China) is not established overnight …it requires a substantial amount of planning, exchange and commitment". One of the most crucial challenges concerning planning strategies for cooperating with Chinese higher education lies in the difficulties of adapting the objectives of European countries to China's needs. Such issue has been neither paid sufficient attention to by the key actors in Europe nor well addressed in the literature.

This article is an effort to fill the gap by taking Finland as an example. Finland recently reformed its policies on internationalisation of higher education with a very clear tendency towards a market approach. For instance, exporting education to China has become one of the priorities. The aim of this study is to examine whether there is a potential fit between Finnish internationalisation strategies on cooperating with Chinese higher education and China's expectations from internationalisation in higher education, and discuss how to improve the Finnish practices on cooperation with Chinese higher education. To approach this research problem, both Finnish and Chinese policy and development with respect to internationalisation of higher education will be introduced. Nevertheless, the paper is not a rigid comparative study, meaning that the internationalisation of higher education in the two countries will be compared based on common grounds or themes. Rather, our intension is to provide a comprehensive picture of internationalisation of higher education in

China, while focus the Finnish case narrowly on its internationalisation strategies on cooperation with China.

New direction of Finnish policies on internationalisation of higher education and strategies on cooperation with China

Higher education has always been inherently international in terms of research, teaching and the mobility of scholars and students (Healey, 2008, p. 354), but what appears to be a recent trend in the international dimension is an increase in competition and commercialisation as a result of globalisation (Marginson, 2004). The market for international higher education has often been understood through the concept of cross-border education, which is generally defined as the movement of people, programmes, providers, knowledge, ideas, projects and services across national boundaries (Knight, 2005, 2006).

Knight (2006) specifies two dimensions for looking at cross-border higher education activities. One dimension refers to the subjects of movement, including people, programmes, providers, and projects/services. The other dimension is concerned with three conditions for cross-border delivery being development cooperation/aid education projects; academic exchange and linkage agreements and commercial/profit-oriented initiatives. Knight has also suggested two significant trends along these two dimensions. One is the shift from student mobility to programme and provider mobility. The other is the shift in international education policy from an "aid" approach to a "trade" rationale. This coincides with van der Wende's (2001, p. 250) assertion that "whereas political, cultural and academic rationales have been driving internationalisation over the last decades in higher education, now, increasingly, economic rationales have started to play a role".

Finland is currently joining the global trend. Hölttä (2007) has classified the internationalisation of Finnish universities into five consecutive but overlapping modes: 1) traditional individual based mobility, 2) internationalisation based on bilateral institutional agreements, 3) programme based internationalisation (mainly in the framework of the European Union), 4) internationalisation based on institutional and disciplinary networks, and 5) market oriented internationalisation. The internationalisation of Finnish higher education institutions (HEIs) has been traditionally characterised by the features of Hölttä's modes two, three and four, with a long tradition of higher education provided free of charge. However, the recent higher education reform, introduced through new national legislation (Universities

Act, 558/2009) and policy guidelines (Finnish Ministry of Education and Culture, 2009), intends to make the transformation to a market oriented model.

In Finland, the central and long-standing goal of the national higher education policy has been to provide equal opportunities for students from all socio-economic backgrounds (Finnish Ministry of Education, 2005, p. 49). Education has been traditionally tuition fee free even for international students. Although equal opportunity and equity have been the driving forces of Finnish higher education policy for four decades, the complete absence of tuition fees for international students creates a problematic situation. Given the high share of public funding, free higher education has actually generated a threat, in the form of regressive income redistribution. Unlike the situation with tax-paying domestic students, the public rate of return is negative when international students move abroad soon after they graduate. At worst, this could mean that the money is transferred from low-income Finnish taxpayers (who are still under-represented in terms of higher education attendance) to international students, who are often from the middle and upper socio-economic classes. For this reason, imposing fees for international students can also be interpreted as a means of promoting the political goal of an equity policy in the form of greater distributional justice.

In spite of these ideological concerns, the reform is also implemented for economic purposes. In the recent reform in Finland, international education has been considered as a revenue generator for HEIs (Finnish Ministry of Education and Culture, 2009). In the trade or market model, the funding of international higher education is no longer a primary public responsibility but rather is increasingly becoming a private good (Marginson, 2004). Such a market approach is underlined by two assumptions (Elonen, 2010). First, as there are few new economy-boosting companies such as Nokia in Finland, the country needs to search for alternative sectors that could bring employment and generate income. Education is one of these sectors. Second, it seems that there is a growing demand for good quality education around the world, and this state of affairs is likely to continue in the future. For the Ministry of Education (2009), the introduction of tuition fees for international students is not only an instrument to increase the international attractiveness of HEIs, but also a way to develop the export of education as a service trade.

Even though the reform has been received with hope and enthusiasm by many in the higher education sector, it has also created controversy and criticism. Some believe that tuition fees will be counter-productive to internationalisation as tuition fee free education has been the way to attract international students to Finland. In their opinion, the fees cannot be the major source of revenue for the universities (Helsingin Sanomat, 2007). Moreover, the domestic students are afraid that the

introduction of tuition fees to international students might open the door for tuition fees in general (National Union of University Students in Finland, 2009).

Regardless of these disputes, a market or an export approach to international higher education has been introduced in Finland. The current legislation in Finland has allowed higher education institutions (HEIs) to charge tuition fees for degree education from international students under two conditions. First, the 2007 Amendments to both the Universities Act (1997/645) and the Polytechnics Act (2003/351) allowed Finnish HEIs to charge fees for their degree education programmes when the fees are paid by a third organisation rather than individual students, called the "made to order" model. Second, according to the new Universities Act (558/2009) and the additional Amendments to the Polytechnics Act (2003/351) both effective from the beginning of 2010, Finnish HEIs are able to charge tuition fees on a five-year trial basis for separate Master's programmes approved by the Ministry of Education and Culture from international students from outside the European Economic Area, provided that the arrangements include a scholarship scheme.

The equity principle, which dominates the values of Nordic welfare society, is still strong in Finland. To avoid the threat of excluding the students from developing countries from the provision of Finnish HEIs the new university law requires that institutions are allowed to charge tuition fees only if they establish a scholarship fund for students who cannot afford paying the fee by themselves. If the 5-year experiment on tuition fee based Master's programmes shows positive results, it is likely that all international students will pay for degree programmes in Finnish HEIs afterwards.

Along with the legislation change concerning tuition fees, the Finnish government published the Strategy for the Internationalisation of Higher Education Institutions in Finland 2009-2015 (Finnish Ministry of Education, 2009). The strategy has set five primary aims for internationalisation: 1) to develop a genuinely international higher education community, 2) to increase the quality and attractiveness of HEIs, 3) to promote the export of expertise, 4) to support a multicultural society, and 5) to promote global responsibility.

A ministerial working group has also developed the Education Export Strategy (Finnish Ministry of Education, 2010b), with several visions and measures. These include the following 1) the precondition for education export should be based on a strong domestic education system and the high quality of education, 2) the export of education will bolster other export business, 3) the operation of education as an export industry entails networking and cooperation between the actors involved, 4) the export of education will offer versatile solutions instead of single products and services, 5) education exports will target chosen geographical areas and focus on selected fields, 6) both the education exporters and educational institutions need to

invest in product development in order to access the international education market, and 7) higher education institutions have a key position in education export.

The transition from the traditional Nordic model of higher education towards a market oriented approach will not be painless. A recent study, based on the interviews of actors involved in (potential) education export in Finland, concludes that Finnish HEIs generally have not been ready for education export, facing a number of challenges, such as the lack of experience and knowledge in marketing, the insufficient motivation and commitment, the lack of national coordination and networks for exporting education, and the need for a clear vision on education export (Cai, Hölttä, & Kivistö, 2012). There is even a lack of strategic thinking on how to implement the new internationalisation strategies (Cai & Kivistö, 2013).

The general challenges in Finnish internationalisation of higher education have been particularly reflected in its practices of cooperation with Chinese higher education. China has recently become a priority in Finnish international strategies with respect to education (Finnish Ministry of Education, 2006, 2007). While the Finnish government has reached political consensus and given enough attention on cooperation with Chinese higher education institutions, there is much room for improvement. The main challenges in practice are as follows. First, there is a lack of cultural awareness and understanding between peoples from both countries. Moreover, it is hard for many Finnish higher education institutions to establish substantial cooperation with their Chinese counterparts. Last but not least, it is not clear for most of Finns how to effectively enter the Chinese markets ant how to work with the Chinese. Most Finnish higher education institutions' cooperation strategies are purely developed from a Finnish perspective, rather than being based on understanding of Chinese realities and their needs.

To overcome the challenges and find appropriate approaches to work with Chinese higher education institutions, one must first understand the policies and practices of internationalisation of higher education in China.

Internationalisation of higher education in China

Major activities

In China, the internationalisation of higher education is an inevitable result of China's integration into the global economy as well as endeavours to improve its higher education system. The process of internationalisation started as early as 1978, when

China opened its doors to foreign investment. The concrete activities can be observed in the following major aspects, namely student mobility, international dimensions in teaching and research, as well as joint education provisions.

Student mobility

Although China has been pouring huge investments into building schools and universities, it cannot keep up with the surging demand from its youth for higher education. The number of students pursuing study abroad has dramatically increased in the last three decades. By 2009, a total number of 1.62 million Chinese students and scholars had studied in 110 countries and regions all over the world, covering almost all disciplines (Chinese Ministry of Education, 2010b). According to statistics from 2005, their primary study destinations were America (32.1%), Europe (27.9%) , Asia (25.2) and Oceania (14.2%) (H. Wang, 2009, p. v). Currently students from China represent the largest international student group in the world (OECD, 2009), and they are going to continue to increase their domination of the international student market in the near future (Maslen, 2007).

The growth of students studying abroad is due to China's rapid economic development and encouraging polices. As a result of the economic reform, overseas education become affordable for more and more Chinese families, primarily from the emerging middle class. This has particularly resulted in a sharp increase of self-funded overseas students after 1999. To illustrate this, in 1998, the self-funded students accounted for 65% of the total number of Chinese students going abroad for study, while the rates in 1999 and 2000 were respectively 75% and 83%. Since 2001, the figure has been always above 90% (Zhuang, Xie, & Ren, 2008, pp. 127-129). Parallel with the improvement in economic conditions, this development is also attributed to the encouraging government policy. Among a series of guidelines and regulations, what fundamentally underlines current overseas study policies in China is the principle set by the Central Communist Party Committee in 1992. It encourages students to go abroad to study, supports them to return, and allows freedom of exit and entry.

China also attaches importance to attracting international students to study in China. From 1978 to 1989, universities were permitted to accept self-paying international students, but due to the restriction on the enrolment quota provided by the State the number was small, for example, 300 in 1978 and around 2,500 in 1989 (Zhou, 2002). Since the 1990s there has been a boom in the number of international students studying in China. On the one hand, legislation has to a large extent transferred the power of recruiting international students to institutions (Shieh

& Wang, 2007). On the other hand, the growing interest among many countries in cooperating with China and entering the Chinese market has driven many of their students to study in Chinese universities.

Compared with the outward flow of students, the scale of international students studying in China is relatively small, although growing steadily. In 2009, the total enrolment of international students in Chinese higher education was 117,548, accounting for 0.4% of college students on campus (Chinese Ministry of Education, 2010a). Among the international students, the vast majority of them are enrolled in non-degree programmes. In 2009, 31.2% of new entrants took degree study programmes (with 21.5% in Bachelor degree programme; 7.8% in Master's degree programme; and 1.9% in Doctoral degree programme) . Most international students in China are studying in separate programmes without much interaction with domestic students.

International dimension in teaching and research

Since the late 1990s, the focus of internationalisation in China has changed from promoting student mobility to enhancing an international dimension in teaching and research. Of significant progress in this regard is the curriculum reform (Huang, 2007, p. 54). First, an increasing number of original English-language textbooks, mainly from the US, have been either directly used in Chinese universities or translated into Chinese language versions. Second, there is a continuous effort in implementing instruction in English or bilingually (Chinese and English), together with an effort to strengthen foreign language (English in particular) skills among both teachers and students. Third, there is a dramatic expansion in the number of programmes for foreign languages/cross-cultural studies, which lead to international professional qualifications at the graduate level.

In addition, the internationalisation of the teaching profession has been strengthened (Y. Wang, 2008, p. 512). An increasing percentage of Chinese teachers have some learning or teaching experience abroad. Similarly, international experts in a variety of fields are invited to teach in Chinese higher education institutions.

Another significant development is concerned with international research cooperation. The Chinese government encourages Chinese universities and research institutes to develop joint research projects with foreign partners by obtaining support from various sources. The Chinese government has also been signing an increasing number of bilateral agreements with different countries/regions. For instance, the Science & Technology Agreement signed between the EU and China in 1998 provides a legal basis for future cooperation on science and technology

between the two sides. As a result, the EU has opened its research and technology development Framework Programme to China, which allows the participation of Chinese institutions. In turn China opened its National High Technology Research and Development Programme (863 programme) and the National Key Basic Research Programme (973 programme) to EU researchers and institutions.

Cooperation in education provisions

One of the most important characteristics of the internationalisation of Chinese higher education in the 21st century is the development in Sino-foreign joint education provisions. Several foreign higher education institutions have already established cooperation agreements with Chinese partners in providing education services in Beijing, Shanghai and Tianjin as early as the late 1980s and early 1990s. However, clear policies regulating these activities were only created in 1995, when the Chinese MOE promulgated the Interim Provisions on Chinese-Foreign Cooperation in Running Schools (hereafter referred to as the Interim Provisions). In 2001, China became a member of the WTO. According to the WTO's GATS (General Agreement on Trade in Services), any form of educational activity that charges tuition fees counts as commercial activity, except for educational services wholly subsidised by the government. According to China's specific commitments to GATS' four models on service trade, only two types of activities are possible for foreign universities engaging in education provision in China: 1) establishing joint schools and programmes with Chinese partners in China, and 2) providing education services in China through individual professors and scholars upon invitation by Chinese education institutions. It should be mentioned, China has not made a commitment to foreign provision of distance educational courses and services in China. To adopt the agreements of the WTO Protocol into Chinese domestic legislation, on 1 March 2003, the State Council issued the Regulations on Chinese-foreign Cooperation in Running Schools (hereafter referred to as the Regulations), in which the term Chinese-foreign Cooperation in Running Schools (CFCRS) has been explicitly defined as: "the activities of the cooperation between foreign educational institutions and Chinese educational institutions in establishing educational institutions within the territory of China to provide education service mainly to Chinese citizens" (Article 2).

Both the Interim Provisions and the Regulations contain the following stipulations: foreign institutions must partner with Chinese institutions; partnerships must not seek profit as their objective; no less than half of the members of the institution's governing body must be Chinese citizens; the post of the president or

the equivalent must be a Chinese citizen residing in China; the basic language of instruction should be Chinese; and tuition fees may not be raised without approval (Garrett, 2004, p. 21). When compared to the Interim Provisions, the Regulations have some important features, namely: extending governmental support of vocational and higher education; strongly encouraging Chinese universities to cooperate with renowned overseas higher education institutions in launching new academic programmes; improving the quality of teaching and learning by importing highly qualified overseas educational resources to local institutions; and relaxing the restrictions on profit-making (R. Yang, 2008, p. 275).

Yang (2008) made a detailed analysis of the CFCRS based on the statistics of 2004. In 1995, there were only two officially approved Chinese and foreign cooperative programmes that could offer an overseas degree. By June 2004, the number of joint programmes had increased to 754, with 169 programmes qualified to award overseas degrees and 51 893 students enrolled in them. The degree programmes approved by the Chinese government are run in collaboration with 164 overseas universities and colleges. Australia has the highest number of partnership institutions, followed by the USA (26.8%), Hong Kong (13.4%), Canada (8.5%), France (6.7%), and the UK (5.5%). In terms of the levels of education, the master's programmes overwhelmingly account for 68.3% followed by the bachelor's level (27.5%), the postgraduate diploma (2.4%) and the doctoral level programmes (1.8%). By subject, most provisions are in the broad areas of business and management (61.0%), followed by IT (13.6%), engineering (7.3%), education (2.2%), law (1.7%), sports (1.7%), etc.

Since 2006, the MOE has in practice suspended the approval of CFCRS due mainly to quality concerns. During the period of 2006–2010, several China-foreign cooperation programmes were discontinued due to poor management, dysfunction and/or poor quality.

Challenges

The major motivation for China to incorporate an international dimension into higher education lies in its desire to increase the quality of higher education and improve its international reputation. The government expects that an internationalised higher education will increase China's competitiveness in the global economy. Thus, the internationalisation of higher education is not only an inevitable result of globalisation, but also a high priority in China's development strategies. Throughout the efforts of the past three decades, internationalisation has had a significant

impact on Chinese higher education development, in terms of the influx of high calibre international education resources, the import of advanced education and training models, and the development of a skilled labour force addressing the need for economic development. As a result, a number of Chinese higher education institutions have enhanced their visibility and recognition within the international community. In spite of these achievements, there is still much room for improvement. Chinese higher education faces the following challenges and dilemmas (Cai, 2011a, pp. 49-51):

- There are no satisfactory solutions to unravel Western ideologies from advanced Western education systems and educational philosophies and to avoid their conflicts to socialist ideologies.
- Low-quality foreign education resources have been introduced in China.
- International education cooperation in China is not in balance between the developed coastal areas and western hinterland.
- There is a lack of degree programmes taught in English in broad areas.

Future prospects of China's internationalisation

In spite of the aforementioned challenges, both the Chinese government and universities have come to realise that only with practice at an international level can Chinese higher education become globally competitive and eventually gain the world-class status (J. Wang, 2009, p. 67). In so doing, Chinese higher education should be more open to the outside world with further international cooperation and exchange of education resources. This has been clearly reflected in the Outline of China's National Plan for Medium and Long-term Education Reform and Development (2010-2020) (Hereafter referred to as the Outline 2010-2020) issued by the State Council in 2010.

The underlying theme of the outline is to build the foundation for a learning society by modernising the current educational system in its entirety. The main goal of a modernised Chinese education system is to be able to provide globally competitive human resources to the working world. In order to intensify the internationalisation, the following measures are suggested:

- To continuously promote international exchanges and cooperation
- To invite high-quality foreign institutions to run joint programmes or joint schools in China

- To attract more world-class scholars and researchers to work in China
- To introduce international text books and teaching materials
- To facilitate mutual recognition of academic credentials
- To cultivate internationally competitive talents
- To admit more international students in China
- To develop more programmes and courses taught in English
- To establish overseas campuses of high-quality Chinese universities
- To improve the legal and policy framework in line with international rules

The main instruments in implementing these objectives, include: 1) providing more financial support for both Chinese students studying abroad and international students studying in China, 2) streamlining administrative procedures with respect to international issues, and 3) improving the conditions of Chinese higher education institutions to attract renowned foreign higher education institutions and scholars. In light of the outline as well as the emerging trends in China and the world, the following development tendencies can be projected in the next ten years.

Highly talented high school graduates tend to study abroad

In the past decade, a vast volume of Chinese students chose to study in undergraduate programmes abroad mainly because they could hardly gain entry into higher education in China or get enrolled in good Chinese universities. While this situation will continue, an emerging trend is that many highly competent high school students, who have the advantage in securing a study place in top Chinese universities, also join an array of studying abroad but with a different motive; i.e. pursuing high quality education and in turn enhancing their employability. Therefore, their target study destinations are prestigious overseas universities, especially the American ones. In 2010, even the MOE started to encourage high schools to assist students seeking overseas study options (N. Yang, 2011). Parallel with international classes and courses in public schools, students can receive additional support from private professional training agencies (Wu, 2011).

The Outline 2010–2020 re-affirms the policy of "supporting students to study abroad, encouraging them to return upon finishing their studies, and they are free to return or leave" and also states that "the services catering for those studying abroad will be improved". Within such policy framework, the increase in the number of higher school graduates, especially high-quality ones, leaving to study abroad will continue to rise. Although a long-term demographic decline will reduce the pool of prospective students, it is unlikely that the absolute number of student studying

abroad will diminish. In some high schools in Beijing, more than half of the hundreds of their graduates received admission offers from foreign higher education institutions in 2011, a 40-50% increase from the previous year (Q. Wang, 2011).

New era of joint education provisions in China

There will be a rise of foreign higher education provisions in China in cooperation with local Chinese institutional partners. The Outline 2010–2020 has signalled that the Sino-foreign Cooperation in Running Schools will be encouraged and expanded. With an aim to provide policy advice for the government and train professionals needed in the practices of running joint programmes, the Research Institute on Sino-foreign Cooperation in Running Schools was established in 2010, jointly organised by Xiamen University and the University of Hong Kong. The government expects that through importing international educational ideas, curricula and teaching staff, more talent with international skills and perspectives will be cultivated in China to meet the needs of economic development. Having more foreign education in China is also considered by the government as a way to prevent brain drain. However, the government will raise the threshold, meaning only those prestigious and high-quality foreign partners can be granted permission to China.

Expansion of Chinese education export

China is going to grow as a major education exporting country. Chinese MOE has set a goal that China will host up to 500,000 international students (of which 150,000 degree students) by 2020, becoming the top destination for foreign students in Asia. There would be more scholarships available to international students as well. Meanwhile, China has ambitions of establishing more university campuses abroad, in addition to Confucius institutes.

A fit between Finland's objectives and China's needs

In short, China's interest in the internationalisation of higher education lies in three key aspects, namely meeting local educational demand, improving the quality of skilled labour, and increasing the international reputation and competitiveness of Chinese higher education (Cai, 2011b). However, the Chinese government is so far

not satisfied with the results in terms of the level of international cooperation and the quality of imported education resources. Therefore, China has shifted its focus from encouraging just any kind of international cooperation supporting Chinese universities to only working with high-quality (prestigious) foreign higher education institutions. Against this background, Chinese universities have become more selective in choosing their foreign institutional partners. Regarding the question why Chinese universities seek foreign university partners for collaboration, Willis (2006) conducted an investigation on the motivating factors behind a significant area of alliance activities and identified a range of reasons driving the Chinese Higher education institutions to form alliances with foreign universities. Among those, the top three reasons are as follows. First, Chinese universities were encouraged by the government to develop alliances so that they could offer a wide range of courses and programs, which would speed up the economic development in China. Second, through cooperating with foreign institutions, the Chinese universities could enhance their image, status and competitive position. Third, Chinese universities wish to internationalise themselves and to be part of a global academic community, by means of establishing alliances with foreign universities. All in all, the quality of foreign institutions must be high and the cooperation must serve local interests.

When Finland develops strategies on cooperating with Chinese universities and entering the Chinese education market, it must be born in mind how Finnish higher education can benefit China. In other words, the question is how to reconcile the Finnish interests on cooperation with Chinese higher education institutions with China's development goals related to internationalisation of higher education.

Is there a fit in terms of policy objectives?

In fact, Finland's and China's policy objectives on internationalisation basically supplement each other as shown in Table 1. With respect to education export, for example, Finland is aiming to export its higher education and believes that the quality of Finnish education is high. On the other hand, China needs to import high quality education to meet the increasing local demands and improve the competitiveness/ international reputation of Chinese higher education. The fact that the majority of Chinese students is pursuing foreign education at their own expenses provides a solid basis for Finnish higher education to export their education to China. Therefore, by theory, there is indeed a perfect potential fit between Finnish government's ambitions and the expectations of China regarding internationalisation of higher education.

Table 1. Finland's expectations and China's interests in internationalisation of higher education

Finland's expectations	China's interests
Recruiting Chinese students to study in Finland Exporting educational programmes and services to China Education and research cooperation with Chinese universities Sending Finnish students to study in Chinese higher education	Encouraging Chinese students to study abroad Meeting growing demands for higher education by importing high quality foreign education Increasing international reputation and competitiveness Attracting international students to study in China

However, in practice such a fit can only be realised when the Finnish higher education as well as its recent approaches to export of education are correctly perceived and appreciated by the Chinese stakeholders and clients. Among many other barriers towards such end, two are crucial. First, although Chinese higher education has been to a large extent marketised in general, and particularly the Sino-foreign cooperation in running schools has a strong commercial attribute, the government is very sensitive to the words "marketisation" and "commercialisation". From a Western perspective, the Sino-foreign cooperation in running schools is by nature the form of joint ventures. Indeed, many such kinds of organisations operate like a business. However, the Chinese government refuses to call them joint venture schools. If Finland uses the term education export, this may cause the Chinese government's antipathy to commercialisation. At least, this may not transmit a correct signal to China, as China has been struggling with many low level foreign education institutions' commercial activities in China.

Second, the high-quality of Finnish higher education is mainly a self-believed image in Finland. The aforementioned assumptions underlying the Finnish education export policy only become valid with respect to China, when the high-quality image is also perceived by the stakeholders of Chinese higher education, namely the government, universities, students and employers. However, the reality is that Finnish higher education in not well known in China. When Chinese universities and students try to figure out the quality of Finnish higher education institutions, the easiest approach is to checking a ranking list. In Finland, only the University of Helsinki is among the top one hundred in the most popular international university rankings, whereas the rest institutions are disadvantaged in this regard.

Towards a fit in practical approaches

It is relatively easy to resolve the first problem. When communicating with China, the Finnish government and universities should be sensitive about their language. It is important for Finnish practitioners to know and use the Chinese terms in

addressing the issues concerning international cooperation and especially providing educational services. The Chinese are willing to pay for service, but they need to buy service worthy of its value.

Therefore, the key challenge for Finland is how to let the Chinese people understand Finnish higher education and in turn appreciate its merits. When this objective is achieved, Chinese universities and students will initially come to find Finnish partners and buy Finnish education on their own initiative. Unfortunately, the true quality of Finnish education can hardly be measured and perceived, and in practice students tend to use any form of information generated by the markets, such as university rankings, students' awareness, and information available in public media, as arguments for their choices when pursuing overseas education (Marginson, 2006). In the light of this observation, instead of trying hard to transfer a self-deemed image to Chinese, the stakeholders of Finnish higher education exports need to think what aspects of Finnish higher education may attract Chinese students in general through influencing the information exchange in the markets.

The attractiveness of Finnish higher education is understood in the aspect of Finnish characteristics that meet China's expectations and interests. Such understanding implies that the attractiveness is not solely a matter of quality or reputation, but is also concerned with the China's national interests. What are these elements? When seeking answers for this question, one should think beyond the higher education realm. For instance, some attractive characteristics and reputation of the Finnish society, education system as a whole and industry can also be relevant here, if their links to higher education are taken for granted or can be easily proved. Following this train of thought, a number of attractiveness features of Finnish higher education can be summarised (Cai, Hölttä, & Lindholm, 2011).

- Finland is one of the global leaders in developing information society and innovation systems.
- Finland has won top positions in a number of international comparisons, such as PISA study, education system and quality of life.
- Finland as a traditional welfare state attaches an importance to the balance between education as a public and private good.
- Finland as a country being successively controlled by Sweden and Russia for hundreds of years understands the need of preserving the national tradition and culture.
- Finland has the highly developed quality culture in higher education as well as the most advanced quality assurance system in the world.
- Finnish government has a strong role in higher education development.
- The curricula and training in Finnish higher education have a close link to the labour market.

- All international programmes in Finnish higher education are taught in English.
- The Finnish approach to education export, implemented by the Future Learning Finland, is not above all profit driven, but emphasising the benefits of local society by importing Finnish know-how.

Identifying the attractiveness of Finnish higher education to China is only the first step for Finnish higher education institutions to prepare their way to China. In the next move they need to convince the targeted groups (education authorities, higher education institutions, students and employers) in China about the attractiveness of Finnish higher education. In so doing they need to develop proper approaches and tactics.

Conclusions

This study has introduced the reform practices, current challenges and further directions of internationalisation of higher education in China at length, which is aimed to provide Finland, as well as other European countries, a starting point to engage in the discussion on suitable strategies towards China. Without knowing what is going on in China and especially the Chinese government's concerns and intentions, it is impossible to develop the right strategies for internationalisation of higher education towards China. When cooperating with Chinese higher education, different European countries may face different challenges and need to develop their own unique strategies. Although there is no common recipe, a starting point for most European countries to plan their strategies should be based upon seeking a match between their intentions and China's objectives.

To illustrate how to think and work towards the harmonisation, this study used Finland as a case for analysis. Based on the above discussions, it can be concluded that there are good conditions for harmonising Finnish objectives and Chinese needs in internationalisation of higher education. Specifically, the Finnish strategy towards Chinese higher education and the characteristics of Finnish society and education can help China to solve the existing challenges in internationalisation of higher education and facilitate the development objectives. The analysis of Finland may hopefully provide insights for other European countries, especially those in similar contexts as Finland, to think how to achieve a fit between their national objectives and the Chinese needs in internationalisation of higher education.

References

Brødsgaard, K. E., & Lim, C. K. (2009). EU-China: Managing a strained relationship. *EAI Background Brief, No. 483*.

Cai, Y. (2011a). Chinese higher education reforms and tendencies: Implications for Norwegian higher education in cooperating with China. SIU Report Series, Vol. 4. K. G. Pettersen (Ed.) *SIU Report* (pp. 1–69). Retrieved from http://www.siu.no/nor/content/download/7700/79536/file/Chinese%20higher%20education%20reforms%20and%20tendencies%20–%20til%20publisering.pdf .

Cai, Y. (2011b). Cross-border higher education in China and its implications for Finland. In Y. Cai & J. Kivistö (Eds.), *Higher education reforms in Finland and China: experiences and challenges in post-massification era* (pp. 245–260). Tampere: Tampere University Press.

Cai, Y., Hölttä, S., & Kivistö, J. (2012). Finnish Higher Education Institutions as Exporters of Education – Are They Ready? In S. Ahola & D. Hoffman (Eds.), *Higher education research in Finland: Emerging structures and contemporary issues* (pp. 215–233). Jyväskylä: Finnish Institute for Higher Educational Research, University of Jyväskylä.

Cai, Y., Hölttä, S., & Lindholm, N. (2013). Establishing sub-campuses in China: A Finnish perspective. *Journal of Research in International Education,* 12(2), 142-154.

Cai, Y., & Kivistö, J. (2013). Tuition Fees for International Students in Finland –Where to go From Here? *Journal of Studies in International Education, 17*(1), 58–81.

Chinese Ministry of Education. (2010a). Education Statistics in 2009 Retrieved 16 August, 2011, from http://www.moe.gov.cn/publicfiles/business/htmlfiles/moe/s4960/index.html.

Chinese Ministry of Education. (2010b). Statistics communique of national education development in 2009 (in Chinese). Beijing: Ministry of Education.

Elonen, P. (2010, 1 January). Education – latest Finnish export product, *Helsingin Sanomat*. Retrieved from http://www.hs.fi/english/print/1135251926192

European Commission. (2007). China Strategy Paper 2007–2013.

Finnish Ministry of Education. (2005). OECD Thematic Review of Tertiary Education: Country Background report for Finland. Helsinki: Ministry of Education.

Finnish Ministry of Education. (2006). *Finland Asia and international cooperation: The Asia Action Programme prepared by the Finnish Ministry of Education, adopted on March 20, 2006*. Helsinki: Finnish Ministry of Education Retrieved from http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2006/liitteet/Asia_Summary.pdf.

Finnish Ministry of Education. (2007). *Destination: Asia – Towards goal -oriented educational, research and cultural cooperation with Asian countries*. Helsinki: Ministry of Education Retrieved from http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2007/liitteet/opm34.pdf?lang=fi.

Finnish Ministry of Education and Culture. (2009). *Strategy for the Internationalisation of Higher Education Institutions in Finland 2009–2015*. Helsinki: Finnish Ministry of Education Retrieved from http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2009/liitteet/opm23.pdf.

Garrett, R. (2004). Foreign higher education activity in China. *International Higher Education, 2004*(Winter), 21–23.

Healey, N. (2008). Is higher education in really 'internationalising'? [Article]. *Higher Education, 55*(3), 333–355.

Helsingin Sanomat. (2007, 26 Feburary). Parties sharply divided on tuition fees for foreign university students, *Helsingin Sanomat*. Retrieved from http://www.hs.fi/english/article/Parties+sharply+divided+on+tuition+fees+for+foreign+university+students/1135225404755

Huang, F. (2007). Internationalisation of Higher Education in the Era of Globalisation: What have been its Implications in China and Japan? *Higher Education Management and Policy, 19*(1).

Hölttä, S. (2007, 21–23 October). *Challenges of and Institutional Responses to Globalisation of Engineering Education in Finland.* Paper presented at the International Symposium on University Engineering Education under Globalization, Beijing university of Technology, Beijing, China, Beijing University of Technology, Beijing, China.

Knight, J. (2005). Borderless, offshore, transnational and crossborder education—definition and data dilemmas. London: Observatory on Borderless Higher Education.

Knight, J. (2006). Crossborder Education: An analytical framework for program and provider mobility. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. XXI, pp. 345–395). Dordrecht: Springer.

Marginson, S. (2004). Competition and Markets in Higher Education: a 'glonacal' analysis. *Policy Futures in Education, 2*(2).

Marginson, S. (2006). Dynamics of National and Global Competition in Higher Education. *Higher Education, 52*, 1–39.

Maslen, G. (2007, November 4). China: Chinese students to dominate world market, *University World News*. Retrieved from http://www.universityworldnews.com/article.php?story=20071101150549773

National Union of University Students in Finland. (2009). No to tuition fees! Retrieved from http://www.syl.fi/english/documents/090302_kannanotto_lukukausimaksut_engl

NESO. (2010). Handbook of Sino–Dutch Institutional Cooperation in Higher Education: Netherlands Education Support Office in China.

OECD. (2004). Policy brief: Internationalisation of higher education. Paris: OECD.

OECD. (2009). *Education at a glance 2009: OECD indicators*. Paris: OECD.

Shieh, C.-J., & Wang, I.-M. (2007). Development of Export of China's Higher Education. Retrieved from http://cnx.org/content/m14289/latest/

van der Wende, M. C. (2001). Internationalization policies: about new trends and contrasting paradigms. *Higher Education Policy, 14*(3), 249–259.

Smith, A. (1907). China and America today. New York: Flemming G. Revell Company.

Wang, H. (2009). Xuyan (Preface). In H. Wang, D. Miao & X. Cheng (Eds.), *Zhongguo liuxue rencai fazhan baogao 2009 (The report on the development of Chinese overseas educated talents)* (pp. III–XVI). Beijing: China Machine Press.

Wang, J. (2009). The internationalisation of higher education in China: The case of one university. In T. Coverdale-Jones & P. Rastall (Eds.), *Internationalising the university: The Chinese context* (pp. 57–71). New York: Palgrave Macmillan.

Wang, Q. (2011, 16 June). Graduates turn from Gaokao to SAT, *China Daily*. Retrieved from http://www.chinadaily.com.cn/china/2011–06/16/content_12718109.htm

Wang, Y. (2008). Internationalization in Higher Education in China: A Practitioner's Reflection. *Higher Education Policy, 21*(4), 505–517.

Willis, M. (2006). Why do chinese universities seek foreign university partners: An investigation of the motivating factors behind a significant area of alliance activity. *Marketing for Higher Education*(16), 124–139.
Wu, W. (2011, 7 July). Testing time for study abroad, *China Daily*. Retrieved from http://www.chinadaily.com.cn/china/2011–07/07/content_12850526.htm
Yang, N. (2011, 25 April). More students choose to study abroad, *China Daily*. Retrieved from http://www.chinadaily.com.cn/business/2011–04/25/content_12384782.htm
Yang, R. (2008). Transnational higher education in China: contexts, characteristics and concerns. *Australian Journal of Education, 52*(3), 272–286.
Zhou, J. (2002, 11 June). China education reform and its development. China Education Daily Retrieved from http://www.jyb.com.cn/gb/2002/07/11/zy/1-jyyw/6.htm
Zhuang, H., Xie, A., & Ren, Y. (2008). *International markets for higher education: the global flows of Chinese students (in Chinese)*. Shanghai: Shanghai Education Publisher.

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Transformation of Higher Education in Innovation Systems in China and Finland

This book publishes selected papers of the 2nd Sino-Finland Higher Education Forum – Transformation of Higher Education in Innovation Systems in China and Finland, held in Tampere, Finland in 2011. The Forum was jointly organised by the University of Tampere, University of Helsinki, Peking University and Beijing University of Technology. The aim was to bring the higher education researchers, policy makers, administrators and other experts together to exchange experiences and views and to explore current challenges of the role of higher education in innovation systems with a particular focus on China and Finland. Ideally, new ideas and best practices could be found by comparing the systems and the policies.

The papers selected from the forum are categorised into six sections, namely 1) Theoretical insights and emerging practices, 2) Finnish experiences, 3) Chinese higher education systems, 4) Roles of universities in innovation systems in China, 5) Transformations in Chinese higher education, 6) Comparative perspectives and cooperation between the two countries.

The book is intended for researchers, administrators, policy makers as well as students of higher education policy and administration.

Cover: Mikko Reinikka | Albert Hall

ISBN 978-951-44-9268-6

9 789514 492686

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