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WEBS OF BORROWING AND LENDING: SOCIAL NETWORKS IN VOCATIONAL EDUCATION IN REPUBLICAN CHINA

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THE IMPORTANCE OF BEING SOCIAL

Research on educational borrowing and lending has been largely concerned with transnational or transsectoral transfer of educational ideas, models and policies (see, e.g., Steiner-Khamsi 2004). Most often, the units between which borrowing and lending are seen to take place are those of the nation-state; but scholars have also looked at how, for example, educational reforms are implemented at the subnational level, after having gone through processes of negotiation, adaptation and, at times, hybridisation at various levels.[1] Most recently, scholars have also paid increasing attention to transnational or global communities in which educational knowledge is circulated, both in history and at present. Differently from players within nationally defined boundaries, these communities transgress national borders or circumvent them by linking up the local directly with the global.[2] It can be almost regarded a tradition within the field of comparative education not to dismiss unfaithful copies of original models and reforms as 'failures' or 'distortions', but to explore the cultural dynamics and rationale behind these sometimes unexpected transformations and side effects. The comparative view sharpens the sensibility for how, in different contexts, things are done in their 'own way', to borrow a phrase from one of the forefathers of comparative education, Michael Sadler, who pondered on the balancing act of

borrowing from outside while at the same time maintaining the 'characteristic[s] of English life' (quoted in Waterkamp 2006: 22).

When things are done in their own way – who does them? For a long time different outcomes of transfer processes were either structurally explained or attributed to regional, cultural or even civilisational differences, but studies of recent decades have attempted to break up this cultural 'black box of education', where 'things happen, but we do not know how' (Hoffman 1999: 474). Local agency has been moved to the fore, to understand how actors make sense of, for example, educational reforms, and how their sense-making leads to certain action (or non-action). Two different perspectives prevail when looking at these actors: one can look at the categorical attributes they possess; or one can look at their interaction, their social relations.[3] Social network analysis is concerned with the latter.

'A social network is a set of actors (or points, or nodes, or agents) that may have relationships (or edges, or ties) with one another', reads the minimalist definition by Hanneman and Riddle (2005). Exploring social networks can yield important insights about social action. Social networks can illustrate both the flows of ideas (carried by people or organisations) and the flows of power. The nature of the nodes (actors) through which ideas pass can tell us something about how the ideas get processed and changed, and how this has a backlash on actors and their behaviour. Social network analysis, maintain Eugenia Roldán Vera and Thomas Schupp, is 'a methodology used to explain social change' (2006: 407). Moreover, social network analysis can bridge the gap between micro and macro studies of society since it looks both at groups and individuals: 'the network approach investigates the *constraining* and *enabling* dimensions of patterned relationships among social actors within a system' (Emirbayer and Goodwin 1994: 1418; emphasis in original). Social network analysis

can also track the paths that travelling agents and ideologies take when transporting models or reforms.[4] It can thus illustrate the intricacy and agency of processes of diffusion and reception, but also the width and hence the power of social movements; social networks have therefore often been described by the metaphors of epidemics and contagion. Social network analysis 'has become a way of articulating the dimension of the "global"'. (Roldán Vera and Schupp 2006: 406)

Despite these advantages, particularly when it comes to exploring processes of borrowing and lending, social network analysis has been mostly used only metaphorically in education studies.[5] Although detractors might claim that education studies always lag behind other social science disciplines, or that data compilation for network analysis is simply too tedious, there might be deeper reasons for this lack of professionalism when dealing with social networks in education. On one side, in spite of heavy investment in data collection, social network analysis usually makes a statement solely on the particular network that is being analysed; generally, network analysts cannot – and have no interest in – "generaliz[ing] to larger populations of such networks..." (Hanneman and Riddle 2005).[6] Analysing a particular social network thus does not entail that the results will be representative of society at large. On the other side, to those education researchers who are interested in local agency, social network analysis might look prone to structural determinism if the focus on relationships – rather than on actors – becomes dictatorial. Claims like that by Ronald Burt that '...people and organizations are not the source of action so much as they are the vehicles for structurally induced action' (1992: 5) can deter researchers who believe in autonomous actors as enacting multiple identities and roles, using and mobilising them strategically, while being embedded into certain ideologies about what is true and good, and what is false and bad.

Mustafa Emirbayer and Jeff Goodwin (1994) have pointed out how a number of studies that make use of social network analysis provide insightful descriptions of networks but fail to look beyond them – namely at how and why these social networks came into being in the first place. They stress the importance of surrounding narratives and underlying rationalities, including the normative commitments of the actors themselves, and criticise most network studies for ignoring the structuring influences of cultural and political discourse on actors, that is, the generative power of discourse. Consequently, while the visible, material structures are carved out skillfully, nonmaterial structures such as symbols and narratives remain largely unexplored. Although this categorical neglect of narratives is indeed widespread, it is not necessarily a compulsive side effect of social network analysis. Social network analysis is a tool for examining (and visualising) social interaction; it does not constitute – at least not to most researchers – a full-fledged theory or world view.

Social network analysis can illuminate the 'how' of social relations, and it can explain the longevity or ephemerality of certain phenomena that are created, maintained or abolished through social relations, but it is much less suited to explain the 'why' of ties – here, other conceptualisations have to come into play. For example, the analysis of a social network like the vocational education movement in Republican China might reveal through which channels the idea of vocational guidance was imported from the United States into China; how earlier networks made it highly probable that it would be the US and not some other country that would be selected as reference society; who served as middlemen or brokers; and which nodes were able to have their say before the idea was finally implemented. However, the analysis cannot explain why actors chose to forge these ties in the first place – which ideas in the educational arena made certain ideas and certain foreign models

attractive? Or from a system perspective, which interruptions and repercussions created the 'system's internal needs for "supplementary meaning"' (Schriewer and Martinez 2004: 32) and thus made the system externalise to references outside?[7] Social network analysis thus works as a complement to, not a replacement of, existing conceptualisations of borrowing and lending.

What is, technically speaking, social network analysis? As pointed out above, most studies of (comparative) education that purport to analyse social networks are not social network analyses in the strict sense but discuss the network character of certain communities. This is by no means to say that these studies are valueless; on the contrary, many of these discussions might go beyond what social network analysis alone, as a methodological tool, would be able to explain. Social network analysis in the orthodox sense makes use of either of the two following conceptual strategies: it tries to explain social behaviour through the fact of connectivity; or it emphasises the notion of structural equivalence (positional analysis) in showing how certain patterns in relationships can lead to certain social change (Emirbayer and Goodwin 1994). Below, I will concentrate largely on the first of these two options. After nodes and ties of the network under examination have been traced (and entered into a database) as exhaustively as possible, network analysts will most often use software programmes in order to analyse and visualise their network (especially if there is a high number of nodes and ties).[8] The most important characteristics that a network analysis investigates – and I am leaving out quite a few details here – are closeness, betweenness, and connectivity within a given network.

Closeness refers to the distance between two given actors or nodes; looking at closeness means investigating how many steps it would take from a given node to

reach all other nodes. The length of paths in a network is not simply a matter of mathematics but has profound social consequences:

> Networks that have few or weak connections, or where some actors are connected only by pathways of great length may display low solidarity, a tendency to fall apart, slow response to stimuli, and the like. Networks that have more and stronger connections with shorter paths among actors may be more robust and more able to respond quickly and effectively.
>
> (Hanneman and Riddle 2005)

Clearly, those actors who have at their disposal a high number of short paths to other actors are in a privileged position to communicate and, ultimately, to influence others. Their enhanced opportunities to bargain make them 'central'; they have networking power.

Betweenness is another measure of centrality and power. It investigates how actors or nodes function as mediators or brokers, that is, how they serve to connect other nodes. Brokers possess a high amount of bridging social capital; their importance rises with an increasingly monopolistic position: if they have few competitors, or are connected to 'pendants', that is, nodes/actors that are only connected to this broker (and thus dangle from the diagram), they have a gate-keeping function. At the same time, however, their increased value endangers the robustness of that part of the network that is dangling – if the gatekeeper is removed (e.g., through political action), the network will be split in two.

Connectivity is concerned exactly with this danger – it denotes the minimum number of nodes/ties that need to be removed in order to disconnect different parts of

a network. If a network possesses many redundant ties, the individual players may be less valuable, but the network is robust. If the network possesses many indispensable ties, the individual players have high leverage, but the network as such is vulnerable, particularly in politically or economically unstable times. Within a given network, connectivity may vary. If we imagine a subculture, for example, we can expect it to be highly connected internally, but only a few actors will have ties to the rest of the network. These 'cliques', in network terms, constitute a set of nodes where every element of the set is connected to every other member. Depending on the power and the social capital of those members who are connected to the rest of the network, cliques can be imagined both as counter-narratives and resistance movements, or as influential think tanks that are close to the central power nodes.

In the following, I will present findings from my analysis of the vocational education movement in Republican China between 1917 and 1927 (see Schulte 2008).[9] After a more general section on social networks in Republican China, I will focus on the Chinese Association for Vocational Education (*Zhonghua Zhiye Jiaoyushe*; in the following: CAVE), which was founded in 1917 in Shanghai. As will be elaborated in the next section, both period and location were characterised by networks of borrowing and lending, in education as well as in other realms. Processes of transfer at the time were bifurcated, displaying the inherent hierarchies and power relations: Chinese urban elites were actively and excessively engaged in borrowing from other countries (mainly Europe, the US and Japan), reflecting the then prevalent (and latent) intellectual colonialism involved in knowledge transfer. This asymmetry of exchange was then replicated towards China's periphery – transfers from urban to rural, literate to illiterate, men to women, etc. Furthermore, there was a more symmetrical exchange between hitherto little connected sectors, such as education and

economy, and transfer across disciplines (such as that of psychology into education). Thus, lending and borrowing took place across national, regional, class, sectoral and disciplinary boundaries. Concomitantly, actors and ideas crossed different physical and ideological worlds.

REPUBLICAN CHINA AND SOCIAL NETWORKS

Republican China was a network society. Daily, thousands of new members joined different political, cultural, educational or business organisations and associations. In the two years following the Xinhai Revolution in 1911, when the imperial government was overthrown and eventually gave way to a republic, almost 400 new organisations emerged. The *Tongmenghui* alone, an umbrella association of revolutionary organisations, grew by several thousand new members each day during this period (Ju 2002). Organisations differed in regional and thematic scope: while some were translocal or even transnational (such as the Chinese Red Cross Society), others were interest associations with a specific local focus. Likewise, comprehensive associations like the Science Society of China (*Zhongguo Kexueshe*) (see, e.g., Wang 2002) were operating along with smaller organisations that were devoted to rather specialised fields and topics. While each of these organisations constituted micro-networks themselves, they were yet embedded in a larger network of associations that emerged through multiple memberships across different organisations. In a society whose political, economic and societal future direction was highly uncertain, networking was a safe investment. Besides conveying a sense of belonging (i.e., transmitting bonding social capital), membership in different networks provided bridging social capital, which could turn out extremely valuable in times of change, as

a diversity of social connections could guarantee more options when encountering crises.[10]

Historically, social networks in the form of associations were not a new phenomenon, but their rapidly increasing number and professionalisation were a novelty. Prior to the Republican era, China had been far from homogenous – much in contrast to official accounts of a cultural and, later, national unity. Even in the nineteenth century, when Western powers, through warfare and unequal treaties, started to force China open, unification and sinicisation were still in the making, with large regions remaining only loosely coupled to the central government. Regional fragmentation was paralleled by a 'secular decline in governmental effectiveness' (Skinner 1977: 19), whereby local affairs were increasingly taken over by nongovernmental networks, due to the growing scale of empire and the decreasing availability of government officials. However, most of these networks were driven by local concerns and often sanctioned by the local government.[11] They were, in a way, closed local systems.

In urban Republican China, in contrast, many social networks were characterised by a high degree of openness. Different from earlier times, when they were mainly expected to regulate what was not sufficiently dealt with by the state, organisations were now eager to win members for their cause, which was often connected to more overarching social movements and ideologies, such as the movement of self-government.[12] Networking became lobbying; Republican Chinese society had become a meeting and market place of ideas and members, particularly in the coastal and, to a large degree, internationalised cities, such as Shanghai, which by the 1920s had become the hub of commercial and cultural activities. Transfer, or borrowing, of ideas and models, both in education and more generally, was facilitated

by two factors. On the one hand, a sense of crisis – often articulated in a Social-Darwinist fashion as the looming extinction of Chinese culture and race – made politicians, entrepreneurs and academics look towards the outside, particularly Japan and the West. On the other hand, the urge to forge ties with likeminded individuals led to the formation of new alliances, which transgressed traditional boundaries between, for example, the world of the literati and that of the entrepreneurs. Thus, while the initialisation of transfer was built on the will – and the pressure – to externalise (cf. Schriewer and Martinez 2004),[13] its ongoing enactment, adaptation and negotiation evolved through social interaction and networks.

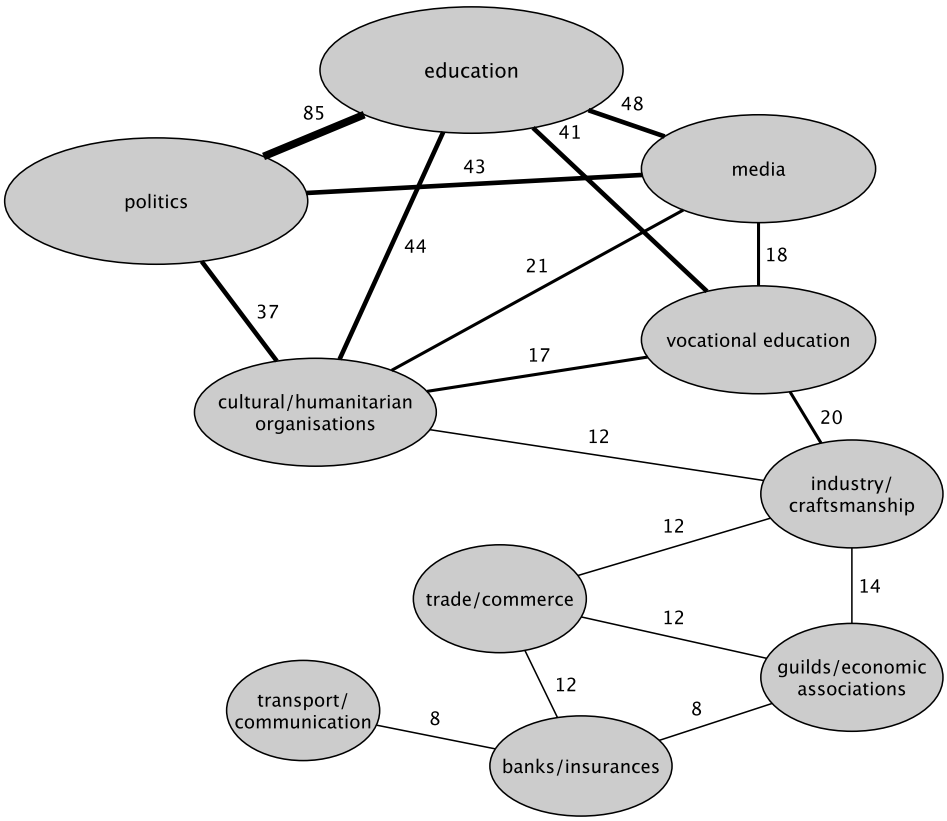
Most Chinese intellectuals and activists towards the end of the Qing dynasty (overthrown in 1911) saw education in a deep crisis. This crisis lay in the perceived irrelevance of education; the solution lay in making it more relevant.[14] Relevance could only be achieved through linking education to reality – which, in the eyes of the modernising elites, was embodied in factories and shipyards. Consequently, vocational education was heralded as the cure for all ills. However, besides merging two hitherto mutually hostile ideological realms – education and entrepreneurship – it was also the people who had to be linked. In 1917, the pedagogue Huang Yanpei (1878-1965) founded CAVE. This association linked Confucian-educated scholars and modern, internationally trained scientists with entrepreneurs, manufacturers, craftspeople, journalists, politicians and political advisors.[15] From an ideological perspective, this alliance was innovative and perhaps daring; from a network perspective, CAVE's members can be seen to have engaged in 'robust action' (cf. Padgett and Ansell 1993). They were involved in several different games at once, they articulated multivocal interests, and thus they made it difficult to attack them: CAVE was joined by Christians, Buddhists and agnostics, and it was populated by

monarchists, anarchists, Communists and Nationalists alike. CAVE's founder Huang Yanpei skillfully interacted with both Nationalist and Communist leaders, allegedly even earning the praise of later premier Zhou Enlai, who is said to have accredited Huang with the capacity to 'weave a far-reaching and close-meshed network with individuals from all possible social circles as well as with young students' (quoted in Wang 1983: 53). Thus, CAVE's – and in particular Huang's – 'flexible opportunism' (Emirbayer and Goodwin 1994: 1436) guaranteed its longevity (CAVE still exists today).

Moreover, CAVE's connection to the non-academic world granted it a strategically advantageous position in Chinese (urban) society. Just as the Medici, in Padgett's and Ansell's (1993) much discussed study, drew their success from the novel alliance between patrician elites and 'new men', educationists in CAVE, as quasi-monopolists, reached out to the entrepreneurial world and could thus profit from what Ronald Burt calls a 'structural hole', comprised of 'disconnections or nonequivalencies between players in the arena', which provide 'opportunities for information access, timing, referrals, and control' (1992: 1-2). Burt's structural holes can be compared to Granovetter's almost proverbial 'weak ties' (1973, 1983), which bring the benefit of connecting to (socially) distant but important nodes. But while 'weak ties' are about the type of relationship, a structural hole is about the chasm that is spanned by the relationship – the cause of creating opportunity; in this case, the productive interface of education and entrepreneurship. While many educators, starting towards the end of the nineteenth century, had talked about the need for education to be rendered more pragmatic and realistic, CAVE succeeded in incorporating 'reality' into its network, much in contrast to other educational associations, which remained largely academic in nature. Figure 1 shows how the

professional profile of members was able to build bridges between gentry and the entrepreneurial world. While there was still a clear binarity between these two worlds, with high professional mobility within each world but not between them, there were 32 individuals who were active in both, namely those who worked in cultural/humanitarian organisations and vocational education. These 32 members constituted the crucial linkages between the two worlds, opening up communication channels that were often nonexistent in other associations.

Figure 1: Clusters of occupations pursued by identical individuals (numbers of individuals in the overlapping section)



However, profit has its ideational price, which is often (and naturally) neglected in business-oriented approaches like that of Burt: the exploitation of structural holes brings a backlash on what is to be negotiated. If the aim is to draw in entrepreneurs (in the broad sense), the rationale and logic of ideas circulating within the network have to, at least to some extent, turn entrepreneurial as well. This is one of the openings in social network analysis where ideas can – and must – come back in: structural holes, or weak ties, open up opportunities, in the sense of obtaining useful social capital; but since they are so valuable and at the same time so different, they also have the power to transform ongoing debates within the network, especially if these debates are perceived to occur in times of crisis and if hitherto upheld paradigms have become questionable and unstable.[16] In CAVE, this interference from the other side of the hole manifested itself above all in a recourse to vocational morality: bankers bring back moral virtues and civilised behaviour as the gist of (business) education (Shen 1923), while others cite values like honesty, patience and endurance, civility and modesty as well as the readiness to serve as being of central importance to employers, and argue for an integration of these values into vocational education (Pan 1923). Vocational guidance, a newly imported idea from the US, was less about helping an individual find the right job, but more about making this individual accept his or her situation peacefully (Wei 1928). Thus, ideas that were originally designed to support individual development were turned into means of containment and subordination of the individual to the larger interest of society.

What does a more detailed analysis of CAVE's network reveal?

SOCIAL NETWORKING FOR VOCATIONAL EDUCATION: THE CHINESE ASSOCIATION OF VOCATIONAL EDUCATION (CAVE)

In the following, I will present, due to limited space, a reductionist picture of CAVE's network,[17] but I will compensate for this shortcoming by illuminating the network from three different perspectives. Firstly, I will outline where its academic members came from in terms of those educational institutions that figured most prominently in training CAVE's future members. Secondly, I will investigate how CAVE's network spread out geographically, both within China and across the world, to assess the reach of this network both in terms of its potential sources of inspiration (or externalisation), and potential sources of influence (or implementation). Thirdly, I will visualise and discuss the members' network through their involvement in both academic and non-academic institutions, in order to assess, by using the tool of social network analysis, what made CAVE, from the perspective of its embeddedness in existing institutions, special. The nodes in the networks discussed below do not represent individual actors, but (most often) institutions.

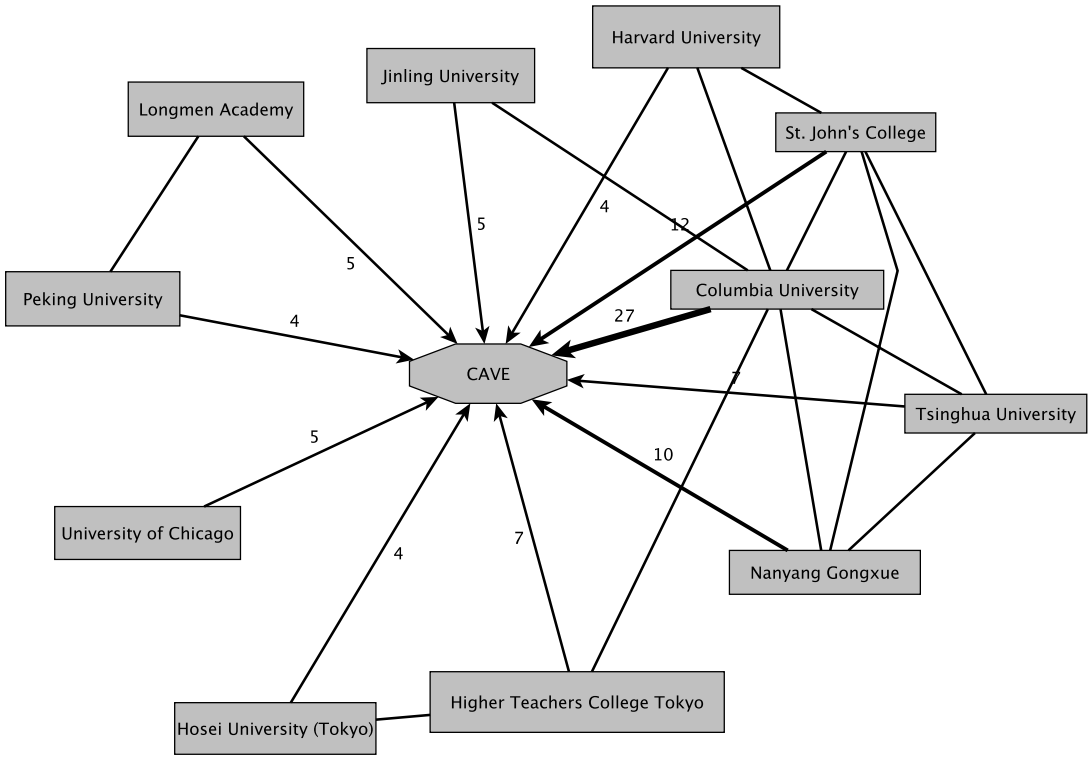
Now to the first question: where were members trained before they entered CAVE?

INITIAL NETWORKS: ACADEMIC TRAINING OF CAVE MEMBERS

CAVE was joined by alumni of quite a number of prestigious academic institutions, both national and international. Figure 2 does not show all institutions where members received their education, but only those that contributed four or more members to CAVE. This means that there were eleven institutions (shown in Figure 2) from which individuals emerged in smaller or bigger groups to join CAVE, indicating that networking had taken place even before they entered this network of

vocational education. Moreover, the network hosted a clique, a foursome consisting of Tsinghua University in Beijing, St. John's College and Nanyang Gongxue, both in Shanghai, and Columbia University. The names of St. John's College and Nanyang Gongxue (or Nanyang Technical College) are less known than Tsinghua or Columbia University today. At the time, these two institutions were crucial breeding grounds for modern knowledge in China.

Figure 2: Academic institutions where members (four or more) were trained (ties between institutions indicate multiple career paths)



St. John's College was founded in 1882 as a missionary school by the Episcopalians and, particularly after becoming registered in the US as a domestic university, trained a large number of later famous politicians, industrialists, diplomats, writers, etc. It was one of the first foreign institutions to teach modern (and thus Western) knowledge in China. Nanyang Technical College was a precursor to Shanghai

Jiaotong University and was a genuinely Chinese project. It was founded in 1896 by the influential industrialist, pedagogue and political advisor Sheng Xuanhuai (1844-1916),[18] in response to a perceived lack of know-how in the engineering sciences. Sheng was deeply worried about the fragmentation of Chinese industrial policy and action (in contrast to what he observed as unitary action among foreign powers), and as an antidote initiated the Shanghai Commercial Consultative Association (*Shanghai shangye huiyi gongsuo*) (Fewsmith 1983).

As a teacher at Nanyang Technical College, Sheng taught many later members of CAVE, who, like him, saw China's backwardness not only in its lacking (technical) expertise, but also in its lacking capability and will to carry through concerted, regulated, political and economic action. The mission of CAVE to install, through vocational education, both technical skills and a sense of unity, can be seen as at least partly emanating from the members' early years at Nanyang College. The clique thus linked two eminent universities, one Chinese and one North American, with two institutions, again one Chinese and one North American, which were specifically established to spread 'new learning'. Seen from the perspective of Columbia University, it was placed at the hub of the network. Besides being integrated into this powerful clique of modernisers, Columbia University has the highest number of connections to other universities (five out of eleven possible ties), thus possessing the advantage of having influenced the most cosmopolitan future members, namely those who received their education at several national and international universities. Figure 2 also shows that, in absolute numbers, Columbia University contributed the most alumni to the network. A majority of those members who had studied in the US (46 individuals) had at one time been enrolled at Columbia University (27 individuals), of which most studied at Teachers College.

Reports from contemporaries who were anything but sympathetic to Teachers College can confirm its paramount role in influencing Chinese pedagogy. German Carl Heinrich Becker, who in 1931 was in charge of conducting an educational report on China for the League of Nations, complained bitterly, in one of his letters home, about the exaggerated emphasis on pedagogical/didactic questions in American pedagogy, and its 'influence [...] on China', in particular 'the dissolution of all real knowledge into gibberish on the method and psychology of education' (from the seventh letter in the compilation by Kuß 2004: 133).[19] In a subsequent letter, he focuses especially on the role of Teachers College:

> Teachers College at Columbia University has had a downright devastating impact [on China]. I have never experienced the corruptive influence of a single institution on an entire continent so overwhelmingly as that of Teachers College on China. Even with regard to our pedagogical academies, we have realized, in spite of the *Abitur* [higher track secondary school graduation certificate], that the [acquired] disciplinary knowledge does not even suffice for instruction in elementary school. At Teachers College, however, pedagogy, with all its subsections (psychology, sociology, administration, etc.) has been turned into a science which counts as a main subject even for higher level schools. This is, of course, great nonsense. [...] In China, educational colleges have now been established everywhere, whose graduates become higher level teachers without mastering correctly even one single school subject.

(from the eighth letter; Kuß 2004: 151)

Chinese returnees from Teachers College occupied not only mediating and/or powerful positions such as those of translators or (educational) politicians, but they also provided an introduction to prominent figures like John Dewey, in thought and in person, who again exerted a profound influence on the Chinese educational landscape during and after his visit to China (see Schulte 2009).[20]

NETWORKS OF ACTION FROM A GEOGRAPHIC PERSPECTIVE

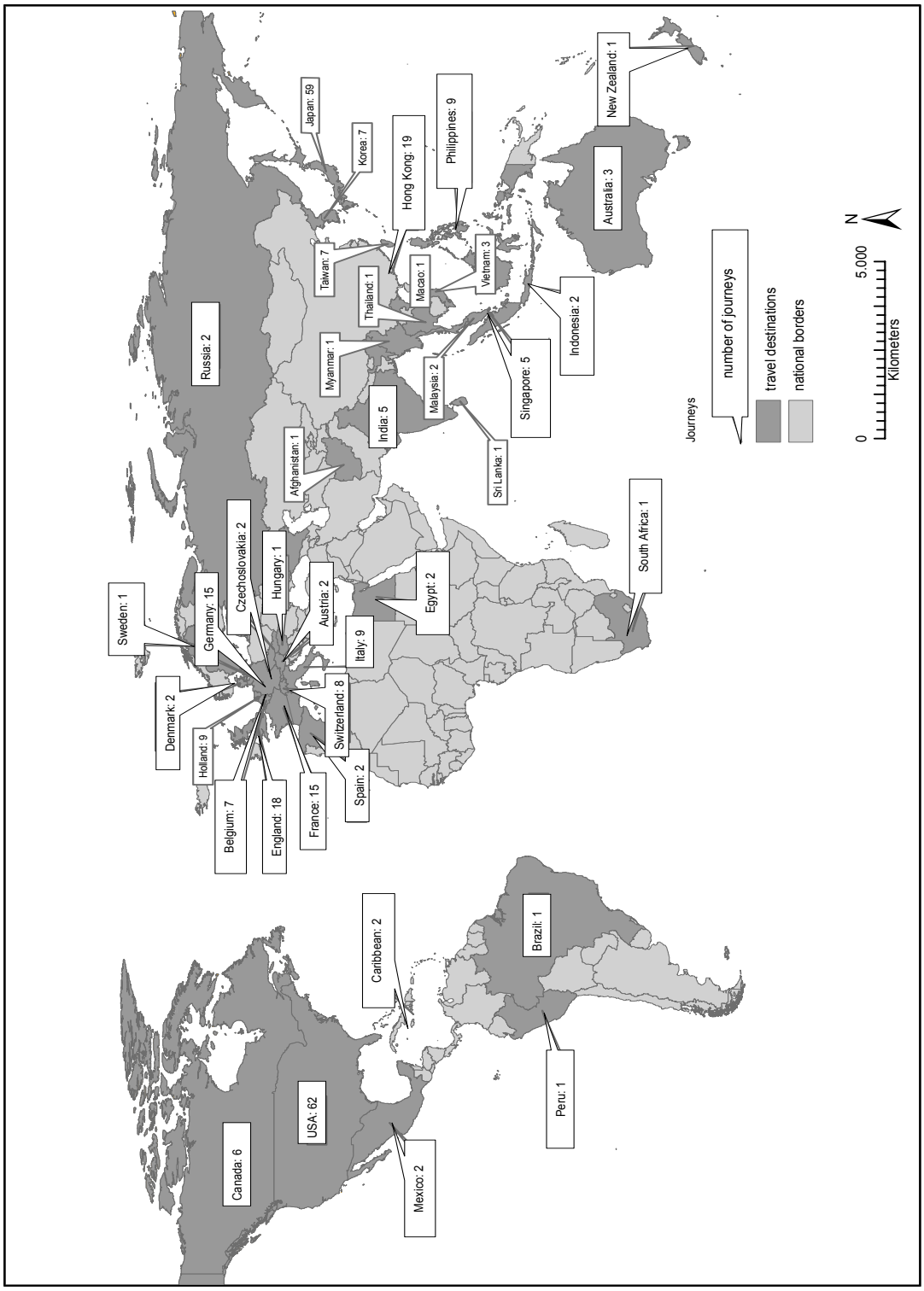
CAVE drew a great part of its inspiration from abroad. As outlined above, Chinese educational culture, to many reform-oriented intellectuals, did not provide sufficient semantic resources to think about amalgamating the needs of the labour market with questions of professional identity and educational training. Other countries looked like convenient suppliers of both ideas and practical solutions.

More than half of the investigated corpus (99 members) had been abroad at least once in their career, either for study or work, or simply for travelling, and all continents were visited by at least one of the actors, although there were obviously vast differences between the popularity of each destination (Figure 3; for better clarity, the journey paths themselves, from China to each destination, are not shown).[21] This number is astounding, considering the fact that those were times of slow transport, scarce resources and (civil) war. The US ranked first as the most visited destination (62 visits), much in parallel with their status as the favorite study destination at the time among those who would become CAVE members, but closely followed by China's neighbour, model and enemy Japan (59 visits), and, at a greater distance, by Hong Kong (19), England (18), France (15), Germany (15) and the Philippines (9).

As illustrative as this map is, it can only visualise the members' international mobility; it cannot explain it. In quantitative terms, the travel pattern can be confirmed if one counts the articles that deal with vocational education in other countries in one of the most important educational journals, the *Educational Review* (*Jiaoyu Zazhi*), between 1909 and 1949. Out of over 200 articles that make clear reference to both vocational education and a foreign country,[22] the US gets the largest share (54 articles), followed by Japan (31), Germany (21), England (15) and Russia (9) (see Figure 4).[23] In qualitative terms, the attractiveness of the US model was owed both to historical legacies and practical concerns.

Historically, the US was the first country to receive Chinese overseas students, starting in 1872 and thus exerting an early influence through Chinese returnees.[24] Besides, as a vast, largely agrarian country and a successful late-comer among global powers, the US was judged to share similarities with China which, in the eyes of the modernisers, could be exploited for educational transfer. The American model, CAVE member and educationist Guo Bingwen (1879-1969) concludes in his comparative study on the German and American systems, combines 'the advantages [of vocational education systems] of the entire world and makes use of these' (cited in Qian and Liu 1998: 93).

Figure 3: World regions to which members travelled (number of journeys)

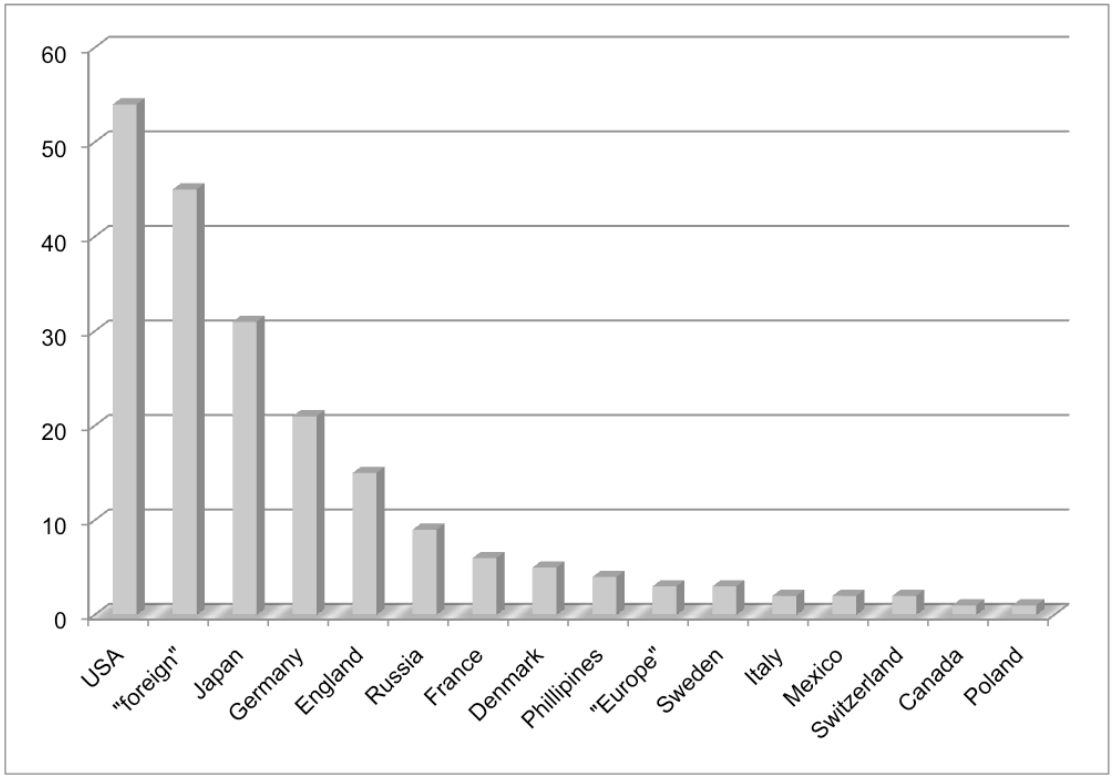


(map: Oliver Oost, modified)

Likewise, Japan seemed to present both commonalities with and differences from China: being Asian and originally peripheral or 'backward', Japan successfully imported Western models and could thus save the trouble of going through all these models again, as the reformer Zhang Zhidong (1837-1909) remarked already in 1895 (1998: 117). Consequently, and also due to its immediate threat to China after Japan's victory in the Sino-Japanese War in 1895, thousands of Chinese students flocked to Japan, making it 'the first truly large-scale modernization-oriented migration of intellectuals in world history' (quoted in Reynolds 1993: 42). Besides, the Japanese model presented an 'Asian alternative' to some and could be used to challenge the perceived US hegemony in educational reform. Similarly, Germany was seen as a suitable example for successfully modernising a 'land of education' (Lu 1916: 15) in a non-American way.

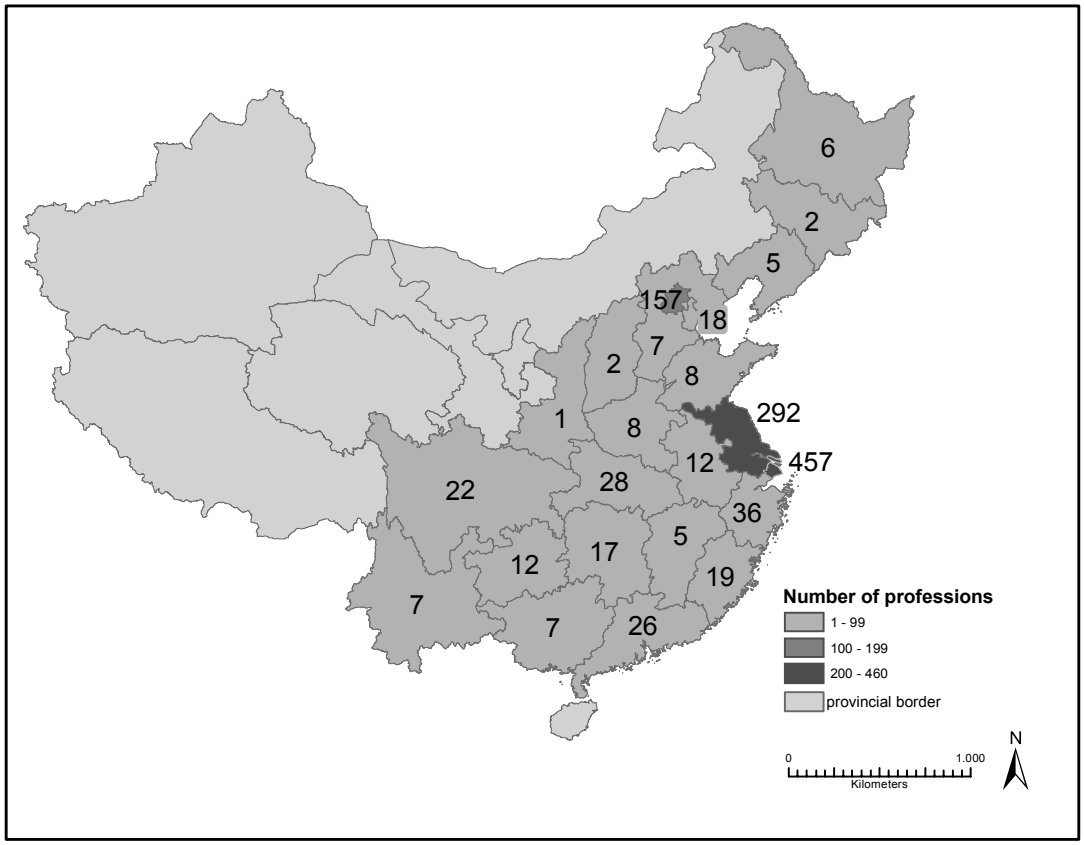
With specific regard to models in vocational education, references to the US or, conversely, to Germany could also signify the conflict between those who were in favour of integrated schools (where vocational education was incorporated into the general curriculum), and those who contested this synchronisation and argued for a more stratified educational system.

Figure 4: Vocational education articles in the *Educational Review* with references to foreign countries (1909-1949)



The rationality of references cannot be fully explored here (but see Oelsner and Schulte 2006, Schulte 2008). However, this brief discussion shows how outreaching networks like international migration can only be sufficiently understood by taking into account the accompanying systems of meanings, pressures and discourses – or, as Harrison White puts it, '[a] social network is a network of meanings' (1992: 67). A further dimension that could be visualised in migration maps like that in Figure 3 (but has not been put to use here) would be the type of ties that reach into each respective country. This could illuminate power flows by, for example, distinguishing between journeys of knowledge-seekers and those of knowledge-carriers. While classic study destinations like the US most often served as sources of information and inspiration, destinations like South Africa were at the receiving end; in this particular case, physician, Christian and CAVE member Diao Xinde (1878-1958) provided medical and mental care for Chinese miners near Johannesburg.

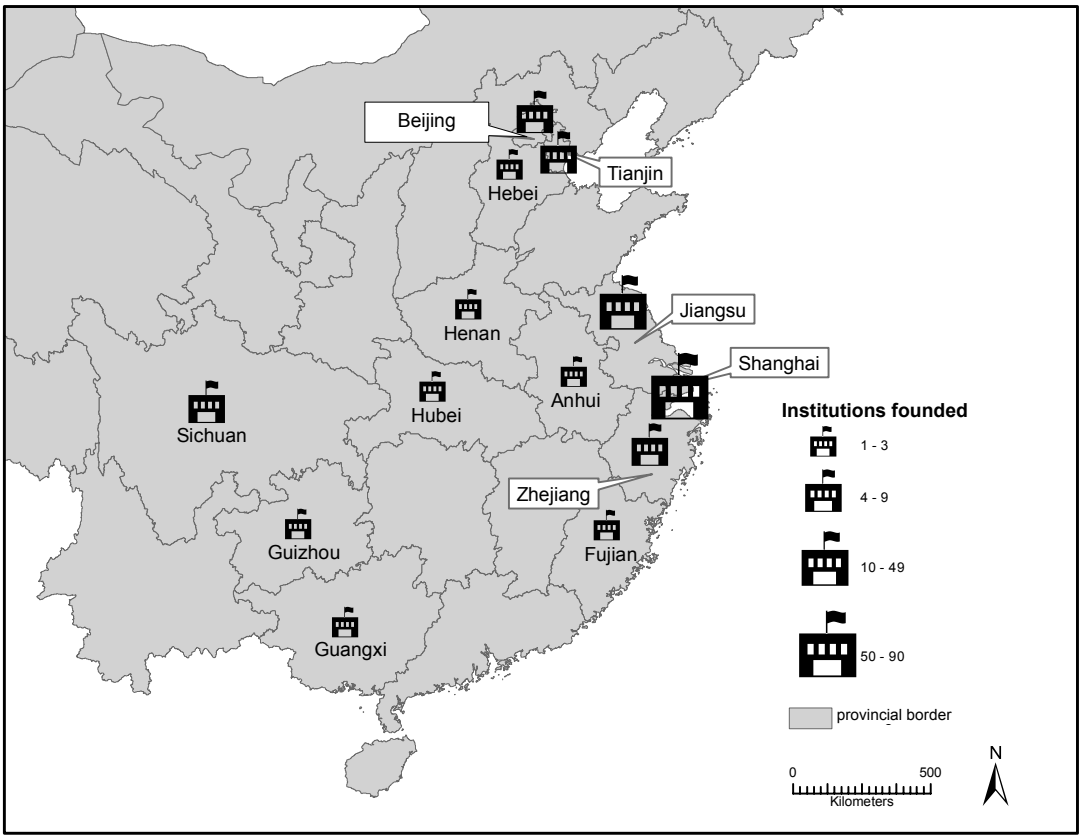
Figure 5: Regions in China where members worked



(map: Oliver Oost, modified)

China's interior provinces were certainly placed at the receiving end. The remainder of this subsection looks at where CAVE members carried their knowledge. Most members were born in the wealthier and more educated provinces along the Eastern coast. Even more members received their education there, with a large part (77 members) obtaining additional educational training abroad. A look at where members worked throughout China, however, reveals a more diversified picture (Figure 5). While the majority of jobs were still pursued in political, economic and cultural hubs, there was also activity in the hinterland, thus casting an almost nation-wide net of engagement in and for vocational education.

Figure 6: Regions in China where members founded institutions



(map: Oliver Oost, modified)

Besides, the number of jobs in urban areas can be artificially high due to frequent changes of employment. Looking at the absolute number of members who had worked in the hinterland at one point in their lives,[25] there were 32 members in all who spent at least part of their professional careers in China's remote areas. The hinterland was also not forgotten with respect to where members founded (mostly educational) institutions (Figure 6). Adding to this the more informal personal contacts that were established between CAVE members and local educators to provide help and support would present the scope of interior engagement as significantly larger, but is difficult to assess quantitatively.

Why did CAVE care about the hinterland at all? Here, again, the narratives and values that circulated in this community come into play. Ruth Hayhoe has diagnosed Chinese intellectuals with being infused by:

> a cultural tradition that emphasized a broad geographical participation in intellectual life [that] was a stronger motivating force for a commitment to regional development on the part of the educated youth than the kinds of coercion through national planning or mass organization exercised in the 1950s and 1960s.

(1992: 68)

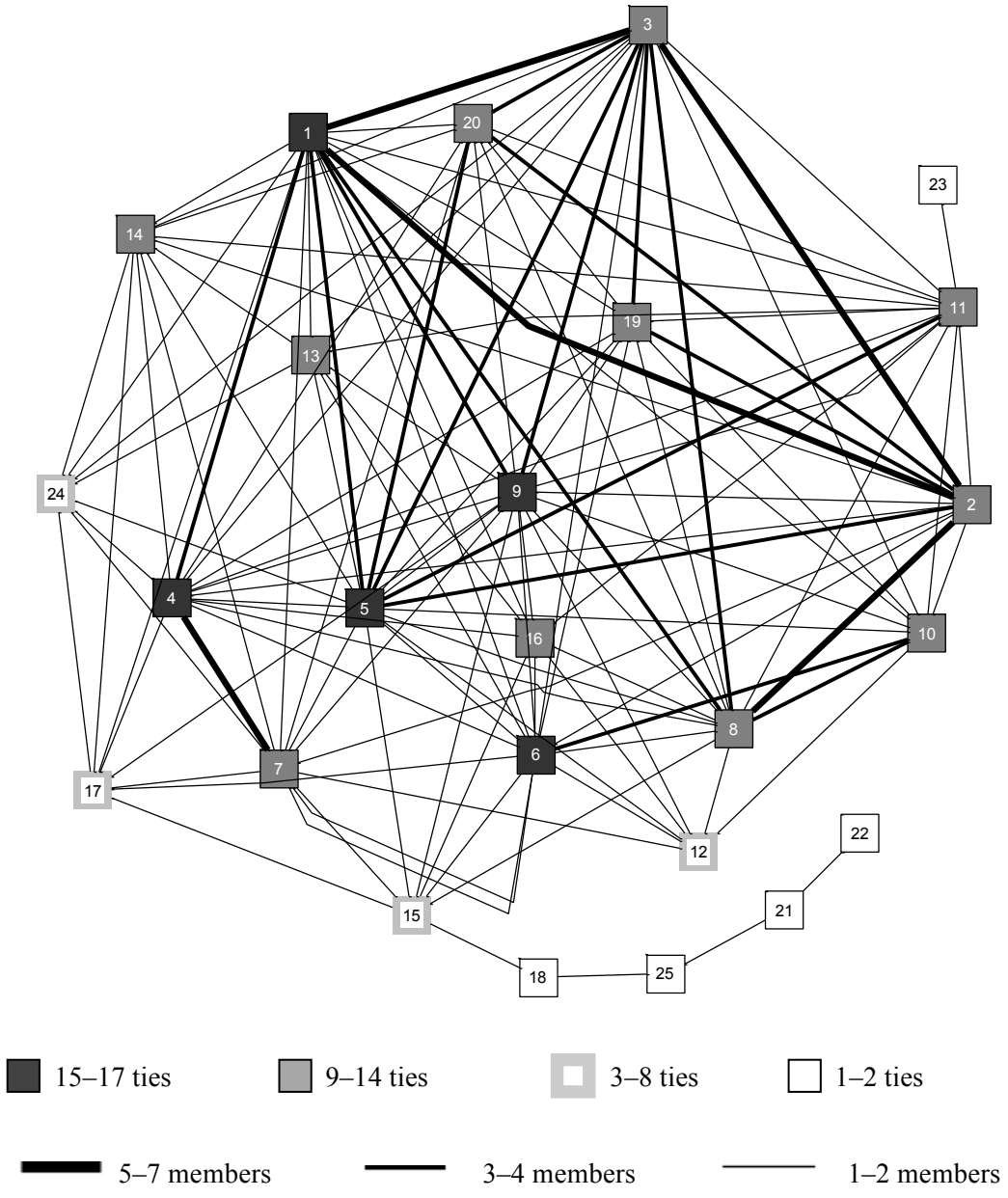
If members of CAVE were influenced by such cultural traditions, they did not reflect on them openly. In their attempts to reach and teach those parts of the population that seemed – culturally, economically and politically – distant to them, they voiced their worries about China's fragmentation and centrifugal forces, rather than about its sense of unity. 'The Chinese do not form groups of more than ten persons', and 'China is a nation without organizations', complained, for example, CAVE member Jiang Hengyuan (alias Jiang Wenyu; 1886-1961), attacking Chinese factionalism that was seen to prevail throughout the country (1933: 2). Regarding the educated strata, he attributed this shortcoming to their widespread arrogance, envy and spirit of exclusion; uneducated strata, by contrast, lacked the will to join forces due to their ignorance and lack of knowledge. Some proponents of the popular education movement within CAVE (such as Wang Maozu (1891-1949) or Tao Xingzhi (1891-1946)) had in mind a genuine democratisation of society, turning individuals into informed and mature citizens.

The largest group within CAVE, however, conceived of this enlightenment project in a one-way manner: culture and modern knowledge were to be passed down to the uneducated, without granting the latter a voice in the process. The pervading imagery when dealing with farmers and workers was that of the child who had to be taken care of (see, e.g., Cai 1921: 7). While in their writings CAVE's educators acknowledged the value of the 'little tradition' (*xiao chuantong*), in practice they showed themselves frustrated by 'bad habits' and 'superstition', which they frequently encountered in non-educated circles. Moreover, they were appalled by those individuals who dared not to conform to the role of the child: emancipated women and Communists (despite the fact that there were a few Communists and women among CAVE's members). Thus, CAVE's 'commitment to regional development', to take up again Hayhoe's (1992) characterisation of Chinese intellectuals, can also be phrased, perhaps a bit exaggeratedly, as internal colonialism. Again, these are speculations about relationships of power and dominion that can be read not directly from the map, but from the discourse in which CAVE's regional networks were embedded.

INSTITUTIONAL NETWORKS

In this last subsection, I will look at a more complex social network that was constituted through the members' multiple engagements at different institutions (Figure 7).[26] The most striking characteristic of this network is its high density;

Figure 7: Institutional involvement of CAVE's members



1 Jinan University
2 Guanghua University
3 Daxia University
4 South-Eastern University
5 Central University
6 China College
7 Commercial Press
8 Higher Teachers School Nanjing
9 Fudan University
10 Peking University
11 Beijing Normal University
12 Nanyang Gongxue
13 Tsinghua University
14 Xiamen University
15 Bank of China
16 Jiaotong Bank
17 Chinese Publishing House
18 Jiangsu Provincial Assembly
19 Hujiang University
20 Huadong University
21 Longmen Academy
22 Tongji University
23 Nankai University
24 Pudong School
25 Chamber of Commerce

the network reveals high closeness, high connectivity and high betweenness. In general, path length – the steps one needs to get from one node, or one institution, to any other node – is short; a high number of nodes can be reached directly, without detour via other nodes. This made communication within the network quick and effective; if a problem arose, the relevant institution could be contacted easily in most cases, often through several people at once (important if people were mobile and often unavailable, and communication media unreliable). As pointed out in the first section, investment in social relations is important in times of instability. The status of many institutions was not only insecure in economic terms, but also often dependant on political patrons. Moreover, particularly in the media business, institutions were existentially competitive: lacking one particular path could mean bankruptcy (e.g., if a publishing house got information regarding future text books later than its competitors).

However, a high number of connections can also be necessary if problem solving is not routinised and institutionalised through reliable administrative structures. From this perspective, high closeness is not just convenient for communication but, as a network of mutual help, becomes a prerequisite, for example, for any implementation of ideas or reforms. Dense networking can thus be interpreted also as a symptom of an institutional void.[27] Finally, with regard to vocational education as a newly emerging field, a multiplicity of relations can also signify attempts at legitimisation: 'The network that filters information coming to you also directs, concentrates, and legitimates information about you going to others' (Burt 1992: 14). In order, for example, to convince experts or the general public of both the value and the feasibility of vocational education, actors had to be as socially mobile as possible.

The second feature of the network, its high connectivity and robustness, is a commonly found characteristic of networks in Republican China and is also due to the danger that channels could be blocked at any time.[28] CAVE's network was doubly robust. Firstly, many nodes could be removed without affecting the capacity of the network in any serious way: out of 25 players in this network, only eight have less than nine connections; five have even 15 or more connections. Secondly, ties were often multiply forged. Individuals could be removed (which was the case not only through migration, but also assassination!), and still the tie would not be erased.

Finally, it looks as if the network is replete with brokers: everybody seems to be 'between' everybody else, thus serving a mediating function. But what kind of brokers were they? Most of the relationships are 'overlapping', not 'additive' (Burt 1992: 18), and are thus redundant relationships from a market point of view: they bring no additional value (but make the network more robust). Expectedly, most redundancies can be found in the academic inner circle of the network (universities), with decreasing overlaps in the media, bank business and, at the bottom of the scale, political and economic institutions – the actual seats of power. One feature of the network stands out here: the 'tail' – or pendant – dangling from the network at the bottom of Figure 7. This group of institutions contained two of the most important players when it came to making and implementing far-reaching decisions: the Jiangsu Provincial Assembly (*Jiangsu Ziyiju*) and the Shanghai Chamber of Commerce. The only node that links these two institutions to the rest of the network is the Bank of China, which makes the Bank, surprisingly, crucial for the network. Ronald Burt (1992: 17) has pointed out the importance of weakly integrated networks, which makes no intuitive sense at first glance, since we tend to see dense networks as 'good' networks. His argument is that sparse networks provide more information benefits (or,

in our case, implementation benefits); it is exactly where cohesion ends that a structural hole can open up. (Again, it is an argument somewhat similar to Granovetter's weak ties but focusing more on the hole than on the bridge.)

The Bank of China was bridging such a structural hole. It connected two realms, politics and economy, to a network whose members, in their self-understanding, were doing just that: connecting their field – (vocational) education – to politics and economy, in order to turn Chinese youth (and adults) into a productive workforce. Or, to put it in a transfer perspective, the Bank of China performed the transsectoral transfer that CAVE's members envisaged, that is, the incorporation of economic reasoning into education. Any member who worked either in the Provincial Assembly or in the Chamber of Commerce virtually passed through the gate of the Bank of China. As much gate-keeping power as that meant for the Bank, it made the network extremely vulnerable – if the Bank was removed, or detached, from the network, the connections to these two important players were lost, and with them those two instances that were capable of bringing the intelligentsia out of their routine of self-referentiality.

CONCLUSION: MORE THAN MEETS THE EYE

Social network analysis, as I have tried to show with the examples above, can give no definite answer to questions regarding social phenomena and processes. It has to be grounded both in a contextual understanding of the networks in question, and in a conceptual understanding of the social processes that are condensed into these visualisations of nodes and ties. Social reality – as reconstructed by the researcher – is more than meets the eye; along with social ties, it is the sense-making processes that

are of importance here. However, social network analysis can also render phenomena more visible which might have remained undetected otherwise.

Strategies in social network analysis have yet to be wed to inquiries into semantic structures, or networks of social meanings. What are the – perhaps conflicting – underlying rationalities and cultural narratives within the network in question? Do these rationales get changed or even replaced through social interaction, what Peter Hall (1993) has framed as paradigm change and social learning? Can networks locate where 'puzzlement', in Hall's sense (1993: 276), takes place; can they show perceived ruptures within sense-making processes which prompt actors to, incrementally or suddenly, shift towards other modes of thinking? There are cases where social network analysis can show, quite convincingly, how a particular constellation in social interaction can have an impact on changing ideas, or changing paradigms, especially if new structural alliances make certain modes of reasoning more probable than before (such as seeing education from an economistic point of view). There is a physical environment and material basis for the mental horizons of actors, which perhaps have been explored too unsystematically in studies that look at educational transfer from a discursive perspective. With the right dosage, social network analysis can help to match the generative power of discourse with the explanatory power of social relations.

NOTES

[1] See, e.g., the studies on reform in Mongolia by Steiner-Khamsi (2005) and Steiner-Khamsi and Stolpe (2006).

[2] See, e.g., the special issue edited by Fuchs (2007) on educational networks in the past, and the article by Ball (2008) on educational networks in the present.

[3] Emirbayer and Goodwin call this the 'anticategorical imperative' (1994: 1414).

[4] See, e.g., Steiner-Khamsi (2006) on 'late adopters' and Roldán Vera and Schupp (2005) on 'early adopters'.

[5] A notable exception is the study by Roldán Vera and Schupp (2005).

[6] However, network analysts, especially in business studies, make use of social network analysis to predict social behaviour within that particular network.

[7] On the concept of externalisation, see in more detail Schriewer (1990).

[8] There is a variety of software programmes available. One of the most commonly used is UCINET (2002); for this chapter, which does without the more complex mathematical operations, I use the software programme yEd for visualisation (yWorks).

[9] An English version is in preparation.

[10] For a distinction between bonding and bridging social capital, see Putnam (2001).

[11] On the evolvement from traditional guilds to modern interest groups, see Fewsmith (1983); on the modernisation of traditional corporate forms of governing in the educational arena, see Schulte (2012).

[12] On self-government, see, e.g., Kuhn (1975).

[13] On reference societies within the Chinese educational debate, see Oelsner and Schulte (2006).

[14] On the Chinese debate about the uselessness of education, see Schulte (2007, 2012).

[15] For a more detailed profile of CAVE, see Schulte (2008); a condensed summary is available online in Schulte (2010).

[16] On policy paradigm change, see Hall (1993).

[17] Although CAVE comprised several thousand members several years after its inception, I have focused on a core corpus of 195 individuals, which consisted of all founding members; members with administrative functions (*zhiyuan*); members who had published in the most important periodicals *Educational Review* (*Jiaoyu Zazhi*) and *Education and Vocation* (*Jiaoyu yu Zhiye*); 'special members' (*teyue sheyuan*); and those 'eternal members' (*yongjiu sheyuan*; particularly affluent members) who joined CAVE in the first two years of its inception (membership data from 'Shanghai Shi Jiaoyuju Guanyu Zhonghua Zhiye Jiaoyushe Beian' 1929).

[18] It thus preceded the founding of the *Jingshi Daxuetang* in Beijing by two years, whose inception is seen by many as the beginning of modern Chinese education. The time lag is another indicator that it was Shanghai, not Beijing, which served as motor of reform and change.

[19] My translation from German; all translations from German and Chinese into English are my own.

[20] The English version is forthcoming in Schulte (2011). See also Su (1996) on how Dewey's ideas were adapted by his disciple Tao Xingzhi.

[21] I am grateful to Oliver Oost, who processed my data with GIS (Geographic Information System) software and produced the maps shown here (the maps were originally in German).

[22] As this inquiry has been conducted only with regard to titles, not to the full text – the *Educational Review* published over 10,000 articles during this time period – it can only mirror the broad trend in discussing foreign vocational education models; it eclipses a large number of articles that in some way or another deal with vocational education but do not show this in their titles. For the investigation, all titles that the index lists under the relevant categories (like 'vocational education', 'vocational

guidance', etc.; see the index in Wu *et al.* 2006) were screened for foreign references. Additionally, all titles were searched for key terms (such as 'vocation', 'industry', 'manual labor', 'unemployment', 'commerce', 'technology', etc.); the remaining list was then tested for their relevance for vocational education and for their references to foreign countries. This procedure yielded 204 results.

[23] The category 'foreign' comprises articles whose title either refers to 'abroad' in general or to multiple countries; similarly, 'Europe' denotes titles that are on Europe in general or on multiple European countries.

[24] For an account of these pioneer students, see LaFargue (1987 [1942]). The US reinvested part of the boxer indemnities (which China had to pay as compensation after the boxer uprising) into educational programmes for Chinese students. On the numbers of students, see Wang (1961: 398).

[25] The 'hinterland' is defined here as containing the provinces Yunnan, Henan, Guangxi, Guizhou, Jiangxi, Liaoning, Heilongjiang, Jilin, Shanxi and Shaanxi. Interior regions like Hunan or Sichuan are not included here, since they were much better off both in terms of infrastructure and political/military influence.

[26] A tie is created between two institutions when one or several members move from one institution to the other, or work at both institutions simultaneously. The thickness of the line indicates the number of members that performed an identical career move. The shade of the nodes signifies the number of ties. In a more extensive analysis, I have also looked at media networks and networks of organisations in which CAVE was involved; see Schulte (2008: 182-92).

[27] On this, and structures of corporate governance in education in Republican China, see Schulte (2012).

[28] See, e.g., Brett Sheehan (2005), who comes to the same conclusion regarding Chinese financial cliques at the time.

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