

# Turning Away from the Big Brother: China's Search for Alternative Sources of Knowledge During the Sino-Soviet Split

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## ABSTRACTS

In den ersten beiden Jahrzehnten der Volksrepublik China spielte die transnationale Wissenschaftszirkulation eine wichtige Rolle beim sozialistischen Wiederaufbau des Landes. In diesem Zusammenhang wurde die Modernisierung durch die Übersetzung und Weitergabe von sowjetischem Wissen vorangetrieben, insbesondere in Form der Zeitschrift *Knowledge is Power* (*Zhishi jushu lilian*). In Anlehnung an den Stil und die Ideen seines sowjetischen Namensgebers *Znanie – sila* präsentierte sie jungen Arbeitern und Studenten die Vision von „morgen“ – der nahen Zukunft. Sie erschien seit dem Jahr 1956, als der Staat zum „Marsch in Richtung Wissenschaft“ aufrief, ein Slogan, hinter dem Chinas Bewusstsein für die eigene Rückständigkeit in Wissenschaft und Technologie stand. Frühere Forschung hat argumentiert, dass ideologische Kampagnen in den 1950er Jahren Chinas versuchten, die technologische und wissenschaftliche Abhängigkeit von der Sowjetunion zu verringern, aber die maoistische Neuformulierung der Rolle und Funktion von Wissenschaft in der zweiten Hälfte der 1950er Jahre – unter Betonung der Notwendigkeit einer eigenständigen Entwicklung (*duli zizhu de fazhan*) – führte letztlich zu einer transnationaleren Ausrichtung von Wissenschaft und Technologie.

In the first two decades of the People's Republic of China transnational science circulation played a significant role in the country's socialist reconstruction. In this context, modernization was pursued via translation and transfer of Soviet knowledge, most prominently in the form of the journal *Knowledge is Power* (*Zhishi jushu lilian*). Following the style and ideas of its Soviet namesake *Znanie – sila* it presented the vision of “tomorrow” – the near future – for young workers and students. Starting its publication in 1956, it supported the state's call for “marching towards science,” a slogan behind which was China's awareness of its backwardness in science and technology. Earlier research has shown how ideological campaigns in 1950s China tried

to reduce the technological and scientific dependence on the Soviet Union, but the Maoist reshuffling of the role and function of science in the second half of the 1950s – while emphasizing the need of self-reliant development (*duli zizhu de fazhan*) – eventually resulted in a more transnational orientation towards science and technology.

*We must overcome difficulties, we must learn what we do not know. We must learn to do economic work from all who know how, no matter who they are. We must esteem them as teachers, learning from them respectfully and conscientiously. We must not pretend to know when we do not know. We must not put on bureaucratic airs. If we dig into a subject for several months, for a year or two, for three or five years, we shall eventually master it. At first some of the Soviet Communists also were not very good at handling economic matters and the imperialists awaited their failure too. But the Communist Party of the Soviet Union emerged victorious and, under the leadership of Lenin and Stalin, it learned not only how to make the revolution but also how to carry on construction. It has built a great and splendid socialist state. The Communist Party of the Soviet Union is our best teacher and we must learn from it.*

Mao Zedong: *On the People's Democratic Dictatorship*, 30 June 1949.

*[The Chinese] have placed before themselves the task of catching up to global science (including our own) in twelve years. But everything suggests that they will accomplish this even sooner.*

Aleksei V. Stozhenko (geography professor and deputy chair of the Far Eastern Branch of the Academy of Science), 1956.<sup>1</sup>

## Searching for Modern Science

The modernization process in 20th century China is characterized by the ambition to catch up or even surpass the advanced nations in East and West. In the last decades of the Qing Empire (1644–1911) scholars and intellectuals envied the so-called civilized countries for their achievements in science and technology and thus engaged in translating foreign knowledge from Europe, Japan, and the United States at an impressive speed.<sup>2</sup> Scholars in the field of Chinese history have since the 1940s described the Chinese

- 1 Aleksei V. Stozhenko to Andrei M. Chekashillo, Russian State Archive of Contemporary History, Moscow (Rossiiskii gosudarstvennyi arkhiv noveishii istorii), collection 5, inventory 28, roller 5200, file 506, pp. 94–95. Here taken from A. Jersild, *The Sino-Soviet Alliance: An International History (New Cold War History)*, Chapel Hill 2014, pp. 39–40. I thank Rui Kunze for her valuable comments on the part discussing science dissemination.
- 2 The publications on China's translated modernity are too many to mention, suffice to list the following three ones as most significant: D. Kwok, *Scientism in Chinese Thought 1900–1950*, New Haven 1965; L. Liu, *Translingual Practice. Literature, National Culture, and Translated Modernity – China, 1900–1937*, Stanford 1995; M. Lackner/I. Amelung/J. Kurtz, *New Terms for New Ideas. Western Knowledge & Lexical Change in Late Imperial China*, Leiden 2001.

process of modernization as a continuous reaction to a Western impact.<sup>3</sup> Their interpretations reflect the historical observation that – most notably since the May-Fourth-Movement (1917–1927) – progressive thinkers who had personally experienced Western modernity propagated “Mr. Science” (*sai xiansheng* 赛先生) and “Mr. Democracy” (*de xiansheng* 德先生). The declared aim was to achieve a strong nation-state able to survive in a social-Darwinist world.<sup>4</sup> This rationale helped intellectuals such as Hu Shi 胡适 (1891–1962), Li Dazhao 李大钊 (1889–1927), Ding Wenjiang 丁文江 (1888–1936), and Chen Duxiu 陈独秀 (1879–1942) to formulate a sweeping modernization ideology ruling both conservative and progressive circles<sup>5</sup>, with the only variation being the question which “Western” country could count as most advanced. Europe and Japan, the models since the 1870s were replaced by the United States in the 1910s, while the success of the October Revolution in 1917 and the ambitions of the Communist International during the 1920s and -30s almost immediately put the Soviet Union on the map. In summer 1949 (a few months before the founding of the People’s Republic of China on 1 October) Mao Zedong 毛泽东 (1893–1976) spoke on the occasion of the 28<sup>th</sup> anniversary of the founding of the Chinese Communist Party (CCP) that the party should orient itself towards the Soviet Union when establishing socialism. He expected China to “lean to one side” (*yibiandao* 一边倒), that is to take Lenin’s and Stalin’s revolutionary strategy as the exclusive model.<sup>6</sup> In his eyes, learning from the Soviet Union meant achieving quick progress. Sharing this view, party officials such as Liu Shaoqi 刘少奇 (1898–1969), Chen Yun 陈云 (1905–1995), and Zhou Enlai 周恩来 (1898–1976) emphasized the urgent need to gain Soviet support for rash socialist construction in order to catch up not only to the Soviet neighbour, but also to surpass capitalist countries.<sup>7</sup> When Mao Zedong met the West German writer Günther Weisenborn (1902–1969) – who on a lecture tour through Asia and Europe<sup>8</sup> passed through Beijing in November 1956 – he described the Soviet Union as

3 Famous here the study by Ssu-yü Teng and J.K. Fairbank, *China’s Response to the West – A Documentary Survey, 1839–1923*, Cambridge, MA 1954.

4 See H. Chang, *Chinese Intellectuals in Crisis – Search for Order and Meaning, 1890–1911*, Berkeley 1987; T. Chow, *The May Fourth Movement*, Cambridge, MA 1960. For the role of Mr. Science in the Maoist era see C. Wei/D. Brock (eds.), *Mr. Science and Chairman Mao’s Cultural Revolution: Science and Technology in Modern China*, Lanham, 2013.

5 See T. Fröhlich, *Staatsdenken im China der Republikzeit (1912–1949). Die Instrumentalisierung philosophischer Ideen bei chinesischen Intellektuellen*, Frankfurt am Main/New York 2000; and V. Schwarcz, *The Chinese Enlightenment – Intellectuals and the Legacy of the May Fourth Movement of 1919*, Berkeley 1986.

6 Mao Tse-tung, *On the People’s Democratic Dictatorship*, in: *Selected Works of Mao Tse-tung*, Peking 1965, vol. IV, pp. 411–424.

7 See here the intriguing discussion in Jersild, *The Sino-Soviet Alliance: An International History*, pp. 12–16.

8 Weisenborn had become famous for his postwar writings on his participation in the resistance against Nazism and was touring Asia (Myanmar, India, the Soviet Union, and the PRC) and European cities (London, Paris, Prague, and Warsaw) for lectures after he had published the first comprehensive report on the German resistance (*Der lautlose Aufstand*, 1953).

*[...] the first socialist country in the world. [It is a country with] very rich experience. We must learn from them. They have also made some mistakes there. We must also learn from their mistakes, so that we can avoid detours and reach our goal along the shortest route.*<sup>9</sup>

When participating in the celebrations of the 40th anniversary of the October Revolution in Moscow one year later Mao reported his personal observation that the neighbouring country had indeed already achieved tremendous progress.<sup>10</sup> Impressed by Nikita Khrushchev's (1894–1971) call for the Soviet Union to exceed the United States in industrial output in the next 15 years he ambitiously declared that China should embark on the same path.<sup>11</sup> At the Eighth National Congress of Chinese Trade Unions on 2 December 1957, the First Vice Chairman of the Communist Party (1956–1966), Liu Shaoqi (an orthodox Soviet-style Communist who was known for favouring state planning) envisioned such an aim:

*In 15 years' time the Soviet Union will be able to catch up with or surpass the United States in the output of the most important industrial and agricultural products and in this time we, on our part, should strive to surpass Britain<sup>12</sup> in respect of output of iron and steel and of other major industrial products. In this way, the socialist world will leave the imperialist countries far, far behind.*<sup>13</sup>

Such vision became the central political rationale in the Great Leap Forward (1958–1961) during which the aim of leaving England behind and the transition from socialism to communism were thought to occur at the same time. This conviction was undoubtedly fostered by the strong optimism among Chinese communist leaders,<sup>14</sup> yet it would be too simple to explain such view by either referring to the teleology of Hegel and Marx with its secularized promise of salvation, or to view it as an effect of the non-contingent character of Chinese modernity.<sup>15</sup>

Continuing the intellectual legacy of the Republic of China the young PRC pursued the building of a strong state based on rationalism and enlightenment. The goal of building

9 Conversation published 14 April 1957 in Liaoning Daily (Liaoning Ribao 辽宁日报). Here quoted after M.Y.M. Kau/John K. Leung (eds.), *Mao Zedong, The Writings of Mao Zedong, 1949–1976*, vol. 2, January 1956–December 1957, Armonk 1992, p. 154.

10 See his reports in the publication of his speeches in Moscow that appeared in December 1957, *Mao zhuxi zai Sulian de yanlun 毛主席在苏联的言论*, Beijing: Renmin Ribao chubanshe 1957.

11 Shen Z./Xia Y., *Mao and the Sino-Soviet Partnership, 1945–1959: A New History*, Lanham 2015, p. 266.

12 Choosing Britain as an ideal is owed to the perception that the United States were the big brother of Great Britain as was the Soviet Union compared to China.

13 H. C. Hinton (ed.), *The People's Republic of China 1949–1979: A Documentary Survey*, Wilmington 1980, vol. 2, p. 618.

14 Such optimism was a central element in Chinese ideological rhetoric in the Maoist era. Compare here the journal *Red Flag* (Hongqi 红旗), the CCP's official journal founded in 1958.

15 This paradigm is present in the majority of Chinese books dealing with the socio-economic transformation of China (published both before and after 1978) and constitutes an important element of the Chinese self-perception today. See here for instance publications by Zhou S. 周尚文, Li P. 李鹏 and Hao Y. 郝宇青 (eds.), *Xin Zhongguo chuqi "liu-Su chao" shilu yu sikao 新中国初期“留苏潮”实录与思考* (Historical Records and Reflections on the Study in the Soviet Union Movement in the Early Period of New China), Shanghai 2012; Zhang Pengsong 张彭松, *Wutuobang yujingxia de xiandaixing fansi 乌托邦语境下的现代性反思* (Reflections on Modernity in the Utopian Context), Beijing 2010.

a modern state was informed by a strong belief in technocracy where technicians and engineers were thought to be the guiding force.<sup>16</sup> In the 1950s, the government continued to combine American pragmatism as taught by William James and John Dewey<sup>17</sup> with the principles of scientific management as put forward by Fredric Taylor and introduced the idea of organizing production under the command of the party that later evolved into the *edinonachalie*, or one-man management.<sup>18</sup> The turn towards technocracy however – while installing a virtually blind belief in the potentialities of the future – had to fight against virtually any irrational phenomena that denied control by the engineer.<sup>19</sup> The Communist Party therefore simultaneously engaged in a harsh struggle against superstition (*mixin* 迷信) that was considered a counterforce to socialist modernity.<sup>20</sup> The materialist science philosophers Xu Liangying 许良英 (1920–2013) and Fan Dainian 范岱年 (born 1926) emphasized in their 1957 book *Science and Socialist Construction in China* (*Kexue he woguo shehuizhuyi jianshe* 科学和我国社会主义建设) that such struggle was highly desired to ensure that the population thinks and acts scientifically.<sup>21</sup> It was vital for the science dissemination movement of that era to replace wrong idealist beliefs with scientific knowledge based on materialism (so that lightning and thunder were no longer seen as signs of the gods, for example)<sup>22</sup>, instead of removing ignorance by filling a knowledge vacuum in a top-down fashion.<sup>23</sup> Authoritative knowledge could accordingly not (necessarily) be found in the Chinese tradition, but had to be imported. The geopolitical situation of the post-World War II era made the Soviet Union a quite natural source of legitimate and verified knowledge. The 1950s saw thus intense translation activities in a variety of sciences, ranging from agriculture and medicine to heavy industry technology and nuclear physics. Taking the Soviet Union as the best teacher for

- 16 See S. Schattenberg, *Stalins Ingenieure. Lebenswelten zwischen Technik und Terror in den 1930er Jahren*, München 2002; S. Kotkin, *Magnetic Mountain. Stalinism as a Civilization*, Berkeley 1995; J. Andreas, *Rise of the Red Engineers – The Cultural Revolution and the Origin of China's New Class*, Stanford 2009.
- 17 See D.W. Marcell, *Progress and Pragmatism. James, Dewey, Beard and the American Idea of Progress*, Westport 1974. On the reception of American pragmatism in Republican China see the discussions in Schwarcz, *The Chinese Enlightenment*; and Chow, *The May Fourth Movement*.
- 18 The Book Series of Studying Soviet Experience of (Economic) Construction (*Sulian jianshe jingyan congshu* 苏联建设经验研究丛书, 1951) that assembles translations of Soviet texts discusses ways of bringing the Party into industrial production as the organizer, the agitator, and the supervisor of the production. See also H. Kuromiya, *Edinonachalie and the Soviet Industrial Manager, 1928–1937*, in: *Soviet Studies* 36 (1984) 2, pp. 185–204; W. Brugger, *Democracy and Organisation in the Chinese Industrial Enterprise (1948–1953)*, Cambridge/MA 1976.
- 19 See the discussion in D. van Laak, *Technokratie im Europa des 20. Jahrhunderts – eine einflussreiche "Hintergrundideologie"*, in: L. Raphael (ed.), *Theorien und Experimente der Moderne. Europas Gesellschaften im 20. Jahrhundert*, Köln 2012, pp. 101–129.
- 20 For an overview on the fight against superstition in China since the late Qing dynasty, see O. Bruun, *Fengshui in China – Geomantic Divination between State Orthodoxy and Popular Religion*, Honolulu 2003; R. Nedostup, *Superstitious Regimes – Religion and the Politics of Chinese Modernity*, Cambridge, MA 2009; Kwok, *Scientism in Chinese Thought 1900–1950*.
- 21 An English translation of this work appeared in 1982; for their arguments against superstition, see Xu L./Fan D., *Science and Socialist Construction in China*, Armonk 1982, p. 66, 69.
- 22 As argued by S. Schmalzer, *The People's Peking Man: Popular Science and Human Identity in Twentieth-Century China*, Chicago 2008.
- 23 M. Michael, *Ignoring Science: Discourses of Ignorance in the Public Understanding of Science*, in: A. Irwin/B. Wynne (eds.), *Misunderstanding Science? The Public Reconstruction of Science and Technology*, Cambridge 2003, pp. 107–125.

a socialist country, however, also meant to accept the important premises of the socialist philosophy of science, among which the view that there is no pure science was a central element.<sup>24</sup>

When meeting Nikolai I. Bukharin (1888–1938), the major theorist of the Communist Party, on the occasion of giving lectures for the Ministry of Heavy Industry in the Soviet Union in 1935 the American philosopher Michael Polanyi (1891–1976) realized that according to the Soviet notion of science the fundamental tenets of natural dialectics and historical materialism eventually limited the scientist's autonomy.<sup>25</sup> In historical research the opposition of Polanyi's view that science required free debate and the socialist assumption that science could be planned has long been taken for granted, even in the case of China.<sup>26</sup> For instance, the Chinese Communist military leader and leading responsible figure in the Chinese nuclear weapons project from 1958 onwards, Nie Rongzhen 聂荣臻 (1899–1992), argued in 1958 that science can certainly be planned and that socialist states should not allow freedom in scientific research as capitalist societies did.<sup>27</sup> In addition, the physicist and Chinese Academy of Sciences (CAS) vice president Wu Youxun 吴有训 (1897–1977) warned against doing research in the sense of “la science pour la science” (*wei kexue er kexue* 为科学而科学), that is doing science without considering its practical application, which would be detrimental to socialist construction.<sup>28</sup>

- 24 When the Chinese People's University (Renmin daxue 人民大学) was founded in October 1950 as the first university of the New China it followed the Soviet model. In contrast to the American model its departments were not the fundamental academic units, but subjected to ideological control of education via the sub-departmental *jiaoyanshi* 教研室, or Teaching-Research Section. Its primary task was to offer the indispensable courses in Marxism-Leninism, Materialism and Political Economy, thereby nurturing the understanding that a socialist state had to pertain to the ideology of class struggle and historical materialism, and second to subordinate science to the material need of economic production. See D. Stiffler, Creating “New China's First New-Style Regular University,” 1949–50, in: J. Brown/P. Pickowicz (eds.), *Dilemmas of Victory – The Early Years of the People's Republic of China*, Cambridge, MA 2007, pp. 288–308. A similarly important role played the *The History of the All-Union Communist Party (Bolshevik) – Short Course (1938)* that was translated in 1939 (Liangong (Bu) dangshi jianming jiaocheng 联共（布）党史简明教程). It is interesting to note in this context that Mao made conscious use of the canonical Short Course when pursuing the sinification of Marxism-Leninism: The Short Course had pointed out Lenin's innovation in adapting Marxism to Russia. On the significance of the Short Course for China see Li Hua-yu, *Instilling Stalinism in Chinese Party Members: Absorbing Stalin's Short Course in the 1950s*, in: T. Bernstein/H. Li (eds.), *China learns from the Soviet Union*, Lanham 2010, pp. 107–130. On the predominance of this book in Chinese education in the 1950s and the Chinese discontent of only learning the history of the Communist Party of the Soviet Union and not of the Chinese Communist Party see the findings of Shen Z. 沈志华, *Sulian zhuanjia zai Zhongguo 苏联专家在中国 (Soviet Experts in China)*, Beijing 2009, p. 191.
- 25 See the discussion in J. Niederhut, *Grenzenlose Gemeinschaft? Die scientific community im Kalten Krieg*, in: *Osteuropa* 10 (2009), pp. 57–68. On the significance of the meeting for Polanyi's later understanding of science see the introduction in his most prominent work *The Tacit Dimension*, London 1966.
- 26 As does earlier research, such as L.A. Orleans (ed.), *Science in Contemporary China*. Stanford 1980; L.A. Orleans, *Soviet Influence on China's Higher Education*, in: R. Hayhoe/M. Bastid (eds.), *China's Education and the Industrialized World. Studies in Cultural Transfer*, Armonk 1987, pp.184–198; and most prominently Shen Z., *Sulian zhuanjia zai Zhongguo*. See also the relevant propaganda posters celebrating the Sino-Soviet Friendship and cooperation, <https://chineseposters.net/themes/sino-soviet-cooperation.php> [05.06.2018].
- 27 Nie Rongzhen 聂荣臻, *Woguo kexue jishu gongzuo fazhan de daolu 我国科学技术工作发展的道路 (My Country's Path in Developing Science and Technology Work)*, in: *Hongqi* 9 (1958), pp. 4–15. Nie, military leader of the PLA, was made a Marshal in 1955 and was later responsible for the Chinese nuclear weapons programme.
- 28 Wu Youxun 吴有训, *Zhongguo Kexueyuan wulixue shuxue huaxuebu baogao (1955 nian 6 yue 2 ri zai Zhongguo Kexueyuan xuebu chengli dahuishang de baogao) 中国科学院物理学数学化学部报告 (1955年6月2日*

Contrary to these observations I share the insights of Klaus Gestwa and Stefan Rohdewald that the transnational organization of natural sciences and technology not necessarily followed the logic of ideological camps during the Cold War era. While their scope is limited to the transcontinental region structured by the iron curtain in the heart of Europe, this paper intends to show that the transnationality of sciences – being a classical example of an entangled history or *histoire croisée* – also applies to Maoist China that actively contributed to the emergence of a global science community. For both Chinese scientists and the CCP learning from the class enemy was undoubtedly a valid strategy for achieving modernity.<sup>29</sup>

For the young People's Republic, this required first and foremost an emancipation from the Stalinist model of development. During the second half of the 1950s a growing critical attitude towards a whole-sale imitation of Soviet state-building developed that was partly the result of lacking economic resources,<sup>30</sup> but also caused by an epistemological turn in Maoist knowledge production. This paper argues that such turn included the conscious consideration of alternative sources of knowledge, may it be indigenous or capitalist knowledges. This paradigmatic turn that had been formulated for the first time in Mao Zedong's 1937 text *On Practice* (*Shijianlun* 实践论) reflected his idea that “neither ‘rationalism’ nor ‘empiricism’ understands the historical or the dialectical nature of knowledge.”<sup>31</sup> Scientific knowledge is ideally derived from workers' and peasants' practical experiences, instead of simply being an objective fact that could be taken out of other contexts and adopted to a new environment. Such science philosophy nurtured a deep-seating pragmatism in choosing the “right” knowledge: legitimate was exactly that knowledge that could serve the aim of modernization and socialist construction. Such view gained considerable speed during the Great Leap Forward (1958–1961) which on the surface can be explained by the insight that nature, society and the economic production can be subjected to human control, eventually resulting in the well-known Maoist voluntarism that emphasized autarchy (*duli zizhu* 独立自主) and self-reliance (*zili gengsheng* 自力更生). These ideas continued to shape the understanding of science and technology up to the Cultural Revolution decade (1966–76). In 1963, Mao – discussing problems in rural work – pointed out in his text “Where do correct ideas come from?” that correct knowledge stems from three kinds of social practice, namely the struggle for production, the class struggle, and scientific experiment. In all three cases a continuous circular relation occurs between perceptual and rational knowledge: matter influences consciousness, and consciousness reflects back again on matter.<sup>32</sup> Mao identifies here a

在中国科学院学部成立大会上的报告), in: Lun wo guo de kexue gongzuo 论我国的科学工作 (On Science Work in our Country), Beijing 1956, p. 61.

29 For the case of the United States and the Soviet Union, as well as the situation in Europe see M. Aust/D. Schönplflug (eds.), *Vom Gegner lernen. Feindschaften und Kulturtransfers im Europa des 19. und 20. Jahrhunderts*, Frankfurt am Main 2007.

30 See the forthcoming monograph by Matten/Kunze, *Learning Science from the Masses – Cultures of Knowledge in 20<sup>th</sup> century China* (Lexington Press).

31 Selected Works of Mao Tse-tung, vol. I, pp. 303–304.

32 This text was part of the Draft Decision of the Central Committee of the Chinese Communist Party on Certain

virtually endless process leading to more refined forms of knowledge, which is in line with his dialectical materialist theory of knowledge. At the same time however, the fact that knowledge production is an endless process reacting to changes both in consciousness and matter means that knowledge is in a fluid state. The chairman of the CCP hereby denies the orthodoxy of any given knowledge, and to search for knowledge beyond the Soviet Union is thus not simply a result of geopolitical changes, but to a large degree also the result of an epistemological turn that was seemingly fostered by both economic necessity and national self-assertion.

The simultaneous rediscovery and innovative development of local knowledge in the quest for political and economic autarchy (a political ideal that envisioned peasants and workers as serious knowledge producers, especially in agriculture and veterinary medicine since the late 1950s)<sup>33</sup> however was more than a consequence of the Sino-Soviet split that seemed to cut the Middle Kingdom off from non-indigenous sources of science and technology. Rather, this paper argues that an explicit scientific pragmatism defined the Maoist attitude of choosing the “right” technological and scientific knowledge.<sup>34</sup> Contrary to common interpretations that the opening to the outside world would find its true breakthrough only with the reform-and-opening politics of Deng Xiaoping in 1978 this paper is going to argue that even after the split and despite the call for a self-reliant development in the propaganda of the 1960s China remained an active member of a transnationally organized global science community.

### **Idealizing the Soviet Union as the Primary Source of Scientific Modernity**

The significant role of science in modernization was politically recognized as early as November 1949 when the Bureau of Science Dissemination under the leadership of the Ministry of Culture of the Central People's Government (*Zhongyang renmin zhengfu wenhuabu kexue pujiju* 中央人民政府文化部科学普及局) was founded. Starting in December it published the *Newsletter of Science Dissemination* (*Kexue puji tongxun* 科学普及通讯) that understood its main task as “disseminating natural scientific knowledge.” Its goals well transcended the arena of natural science:

Problems in Our Present Rural Work. See Mao Zedong 毛泽东, *Ren de zhengque sixiang shi cong nali laide ren de zhengque sixiang shi cong nali laide?* (1963), in: Mao Zedong zhuzuo xuandu (xiace) 毛泽东著作选读 (下册), Beijing 1986, pp. 839–841. On a typical interpretation of Mao's text on the question where correct ideas come from see Fanfu shijian buduan qianjin 反复实践 不断前进, Jinan 1965.

33 See here the forthcoming monograph by Matten/Kunze, *Learning Science from the Masses, as well as Fang Xiaoping, Barefoot Doctors and Western Medicine in China*, Rochester 2012.

34 A classic example of how the emancipation in knowledge production was celebrated by the Communist Party offers Du Runsheng, *Great Progress Made in the Natural Sciences in China During the Last Decade*, in: *The Science News Letter* (*Scientia Sinica*) 78 (1960) 24, pp. 377–392.



*to propagate materialism and to enable the laboring people to grasp techniques and technology for production as well as the rules of natural development so that they are qualified for the tasks of national [economic] production and construction.*<sup>35</sup>

The great bulk of popular science literature in the 1950s and 1960s shared this line of argument in spreading the idea of people's science (*renmin kexue* 人民科学), or mass science (*qunzhong kexue* 群众科学).<sup>36</sup> Its keynote had been set in 1941 by the oversimplified definitions of natural science by Mao Zedong 毛泽东 (1893–1976) as “the weapon to explain and conquer nature”<sup>37</sup> and “the knowledge about the struggle of production” in 1942.<sup>38</sup> Controlling and shaping the natural world according to human needs made perfect sense to Maoist thinking, represented most prominently in the famous parable “The Foolish Old Man Who Removed the Mountains” (*Yugong yishan* 愚公移山).<sup>39</sup> Such spirit was most prominently embodied by the famous saying of Francis Bacon (1562–1626) that knowledge meant power. Introduced to the Chinese audience in 1936 as the father of science who had invented materialist philosophy and liberated philosophy from the monasteries the image of Bacon influenced attitudes towards science and technology profoundly.<sup>40</sup> His dictum “Knowledge is Power” became common knowledge however only twenty years later when in 1956 the science dissemination journal bearing the title “*Knowledge Is Power*” (*Zhishi jiushi liang* 知识就是力量) was published for the first time. The first issues were direct translations from its Soviet namesake journal on popular science (*Znanie – sila*, founded in 1926) that had installed the slogan as a generally shared idea in socialist countries and shaped the consciousness of the new working class. With its distinct focus on industrial development this journal arrived at

35 Kexue puji wenti zuotanhui zongjie 科学普及问题座谈会总结 (A Summary on the Symposium on Science Dissemination Problems), in: Kexue puji tongxun 科学普及通讯 (Science Dissemination Newsletter) 1 (1950), p. 3 and 7; 2 (1950), pp. 20–22. A slightly different formulation is the following: “the propagation of natural scientific knowledge plays an extremely important role in cultivating the Communist worldview and enables ordinary workers, peasants, and soldiers to learn science and technology required by economic production and thereby grasp the laws of natural evolution.” See Sige yue lai de kexue puji 四个月来的科学普及局 (The Office of Science Dissemination in the Past Four Months), in: Kexue puji tongxun, (1950) 1, p. 2.

36 The term appeared for the first time in the early 1950s, e.g. Gao Shiqi 高士其, Jianshe aiguo zhuyi de renmin kexue 建设爱国主义的人民科学 (Building a Patriotic People's Sciences), in: Kexue puji gongzuo 2 (1951), p. 29.

37 Mao Zedong, Tichang ziran kexue 提倡自然科学 (Promoting Natural Sciences), in: Jiefang Ribao, 12 June 1941.

38 Mao Zedong, Zhengdun dang de zuofeng 整顿党的作风 (Correcting the Party's Work Style). The essay was originally published as Zhengdun xuefeng dangfeng fenweng in: Jiefang ribao 解放日报 (Liberation Daily), 27 April 1942.

39 Presented for the first time by Mao Zedong in his concluding speech at the Seventh National Congress of the Communist Party of China on 11 June 1945, this text became in 1966 one of the “three frequently-read articles” (*Laosanpian* 老三篇). For the parable see Mao Zedong xuanji 1967, 3, pp. 1049–52; English translation in Selected Works of Mao Tse-tung, vol. 3, pp. 271–274.

40 On the occasion of the 310<sup>th</sup> death day of Francis Bacon (1562–1626), Weng Zhiyun 翁植耘, an important publisher of Zhejiang province, lauded Bacon as the one who had turned philosophy into a powerful tool for humankind for improving its living conditions. Weng's article appeared in the journal Tushu zhanwang 图书展望 (Book Outlook) (1935–27, 1946–49). Published by the Zhejiang Provincial Library it introduced new books and bibliophile knowledge. See Weng Zhiyun 翁植耘, Kexue de fuqin zheren Folanxisi Peigen [Francis Bacon]: shishi sanbai shinian jinian: Zhishi jiushi liang, liliang jiushi zhishi “科学的父親”哲人佛蘭西斯·培根：逝世三百周年纪念：“知識就是力量，力量就是知識” (The Father of Science – the Philosopher Francis Bacon: Remembering his 310th death day: Knowledge is Power and Power is Knowledge), in: Tushu zhanwang 6 (1936), pp. 19–27.

creating a vision of modernity that was readily taken over by the Chinese. Following the journal's style and ideas it presented the vision of “tomorrow” – the near future – for young workers and students of polytechnic secondary schools. It started its publication exactly at a time when the state called for “marching towards science,” a slogan behind which were China's awareness of its backwardness in science and technology and its desire to catch up with the achievements of the Soviet Union.

Fig. 1: Title page of the journal *Knowledge is Power* (left image Soviet original of 1/1959, right image Chinese version of 4/1960).



Learning from the Soviet Union and overcoming backwardness – an important concept in devising state plans and developing education – was part of the political guideline of 1950s Maoist China, resulting in a full-fledged transfer of ideological, political, social, and technological knowledge. Such transfer occurred in that era more often than not in a copy-and-paste fashion (see Fig. 1) owed to the obligation to follow the lead of the Soviet Union.<sup>41</sup>

41 However, knowledge transfer sometimes also took the opposite direction: in 1961 the journal *Zhishi jiushi liliang* reports that the Soviet Union was implementing and developing Chinese medical practices such as acupuncture (Zhongyi zhenjiu zai Sulian 中医针灸在苏联, in *Zhishi jiushi liliang* 2 (1961), p. 46). See also the Chinese translation of an article by the two corresponding members of the USSR Academy of Medical Sciences Kočergin 柯切尔金 and Kassil 卡西里 on the function of acupuncture (translated by Wang Changbi 王昌璧), *Zhenjiu 针灸* (Acupuncture), in: *Zhishi jiushi liliang* 6 (1961), pp. 18–19.

In the early 1950s the Sino-Soviet knowledge transfer was indeed characterized by a clear hierarchy as shows the following propaganda poster dating from April 1953 (Fig. 2). The Soviet expert is not only physically larger, but judging from his outer appearance and gestures also appears as an icon of “Western” modernity. When both countries concluded the 30-year Treaty of Peace, Security, and Friendship on 14 February 1950 the PRC accepted to take over the role of a “little brother” who was eager to conform to Soviet conceptions of ideology and foreign policy while receiving support in the socialist construction of their country. A central part of the treaty was economic cooperation and the transfer of technological knowledge to kick-start China’s industrial development. Existing research shows that learning from the Soviet Union was never truly smooth, but from time to time conflictual, caused by cultural insensitiveness, chauvinism, colonial attitudes, disputes over payments, privileges, and technical competence etc., i.e. problems that contradicted the ideal of proletarian internationalism that was considered the foundation of Soviet help to the younger brother.<sup>42</sup>

Fig. 2: Study the advanced production experience of the Soviet Union, struggle for the industrialization of our country, April 1953 (designed by Li Zongjin 李宗津).<sup>43</sup>



Though *Knowledge is Power* is considerably unideological (it was dedicated to popularize a given set of scientific knowledge) – with the exception of the texts that are politically motivated, such as those commemorating the 40<sup>th</sup> anniversary of October Revolution – ,

42 See here the findings of Shen, Sulian zhuanjia zai Zhongguo and Jersild, *The Sino-Soviet Alliance: An International History*.

43 Link: <https://chineseposters.net/posters/e13-556.php> [10.04.2018].

it reinforced the view that power can be legitimized by science and that science itself can be instrumentalized in a techno-political fashion.<sup>44</sup> The close connection of science and development was characteristic in the journal that strikes the reader as a magazine displaying tomorrow. The idea of a near, utopian future of communism is conveyed and concretized through large amounts of visuals such as colored covers, inserts, illustrations, and photos. Even the fact that this magazine could afford to print these visuals on relatively high-quality paper was itself rare at the time and therefore appeared futuristic as an indication of material abundance. The first five issues of the magazine published with the help of the Soviet Union set up the keynote of expecting and prescribing the future following an idealized portrayal of the achievements and application of Soviet, i.e. socialist, science. It is interesting, however, to note that the attempts to demonstrate the positive role of science and technology for humanity and thus to argue the superiority of its political system characterized both sides of the Iron Curtain. Whereas the West side claimed “an indissoluble link between scientific genius and liberal democracy,”<sup>45</sup> the East side celebrated their scientific and technological progress under socialism, which was believed to be realized by the state’s central – necessarily scientific – planning and the creativity of the liberated labor force. In the words of the Soviet chemist N. D. Zelinsky (1861–1953): “The happiness of the Soviet man lies in the joyful, beautiful, and creative work, which is only possible under the socialist system.” In other words, the political system of socialism liberates the laborer, allows him/her to receive education and training which turn him/her into a new man (or woman) – the Soviet man (or woman) – who, in turn, contributes to the progress of science that benefits the progress of humanity. The Communist Party, by making and implementing “the strict, scientific plan,” leads its people to produce miracles, “which one after another come out of science fiction and become reality.”<sup>46</sup> Therefore, the faith in the infallibility of science turned into the faith in the infallibility of the Party and the political system. To convince the reader of a predictably beautiful “tomorrow,” some visuals and texts in *Knowledge Is Power* deliberately reduce the distance between the present and the future, as became prominent in the conviction that “The Soviet Union of today is our tomorrow” (*Sulian de jintian shi women de mingtian* 苏联的今天是我们的明天)<sup>47</sup>, as shows Fig. 3.

44 As argued by Heuermann in his article on technology as myth and ideology. See H. Heuermann, Technik als Mythos-Technik als Ideologie, in: P. Drexler/Heuermann (eds.), Technikgläubigkeit. Technikkritik: Ihre Darstellung und Bewältigung in Kultur und Gesellschaft. Beiträge zur Ringvorlesung an der Technischen Universität Braunschweig im Wintersemester 1992/1993, Braunschweig 1993, p. 24.

45 B. Schroeder-Gudehus/D. Cloutier, Popularizing Science and Technology During the Cold War: Brussels 1958, in: R.W. Rydell/N. Gwinn (eds.), Fair Representation: World's Fairs and the Modern World, Amsterdam 1994, pp. 157–180.

46 Zelinsky is quoted in Zhou Wenxiang 周文樞, Qinai de pengyou men! 亲爱的朋友们 (Dear Friends!), in: Zhishi jishi lilian 1 (1956), p. 2.

47 Other media in this context were pictorials such as Su-Zhong youhao 苏中友好 (Soviet-Chinese Friendship) and Zhongguo huabao 中国画报 (China Pictorial) that visualized the knowledge exchange happening in every corner of society.

Fig. 3: The Soviet Union is our Model (*Sulian shi women de bangyang* 苏联是我们的榜样), October 1953 (designed by Zhao Yannian 赵延年 and Qian Daxin 钱大昕).<sup>48</sup>



### Inviting the Soviet Experts to China

Taking the Communist Party of the Soviet Union as the best teacher from whom China could learn (as Mao Zedong put it in 1949), the 1950s saw a huge influx of Soviet experts (*Sulian zhuanjia* 苏联专家) who provided Chinese workers and peasants with new knowledge and technology in virtually every area of economic production.<sup>49</sup> Previous research has shown that in the 1950s China profited enormously from the experiences of the Soviet Union when not only Chinese went to USSR to receive training in various fields in industry and agriculture, but also Soviet advisors were sent to China. Their exact numbers are difficult to determine. Orleans claims that more than 11,000 Chinese went to the USSR to get Soviet style training and 7324 came back with proper qualifications, and estimates a total of 8,000–10,000 Soviet advisors residing in China from 1950–1960, but only 126 in the years 1950–1952.<sup>50</sup> This number seems plausible given the recent discovery in Russian archives by Shen Zhihua. According to his findings, the Soviet minister of Foreign Affairs (1949–1953) Andrey Vyshinsky (1883–1954) had listed in a secret report (dated 17 April 1952) to the Soviet diplomat-politician and the First Deputy Premier (1942–1957), Vyacheslav M. Molotov (1890–1986) 107 ex-

48 See <https://chinese posters.net/posters/pc-1953-002.php> [15.03.2018].

49 For a testimonial report on the Soviet experts in China see M. Klochko, *Soviet Scientist in China*, London 1963.

50 Orleans, *Soviet Influence on China's Higher Education*, p. 188.

perts of which 73 had already been sent by 15 April 1952.<sup>51</sup> Goikhman specifies the number of 10,000 non-military advisors during 1949–1960 but adds that it is unclear who counted as a specialist or expert.<sup>52</sup> Deborah Kaple mentions a number of roughly 10,000, but admits that she found during her research only one exact number: in the first quarter of 1954, 403 Soviet advisors had been sent to China working at twenty-eight ministerial-level institutions, among them 127 in the Ministry of Education, 49 in the Ministry of Fuel Industry and 45 in the Ministry of Heavy Industry.<sup>53</sup> She holds the opinion that the actual exchange with advisors only started in 1953 after Stalin's death. Before that, the transfer existed mainly in the form of books and translations, not so much in the form of advisors.

In fact, from the early 1950s on there is a bustling activity of translating Soviet books and manuals on science and technology that growingly entered Chinese libraries.<sup>54</sup> Chinese communists eagerly read Soviet newspapers, journals, and books to obtain valuable insights. The *Chinese General Title Catalogue* (*Quanguo zongshumu* 全国总书目) for the years of 1949 to 1953 includes thousands of Soviet books that were translated and printed in Chinese.<sup>55</sup> In the agricultural sector, for example, the journal *Soviet Agricultural Science* (*Sulian nongye kexue* 苏联农业科学, starting publication in 1950) introduced translations of Soviet articles dealing with new discoveries in plant breeding (including the theories of Lysenkoism), use of herbicides and pesticides, and animal husbandry to the Chinese. In the field of natural sciences, the Scientific Information Research Institute of the Chinese Academy of Sciences (中国科学院科学情报研究所, founded in 1956)<sup>56</sup> published translations of excerpts taken from major Soviet scientific journals.<sup>57</sup> Despite Mao's later warning against "mechanical absorption of foreign material" in his April 1956 speech "On the Ten Major Relationships" the CCP took over in almost wholesale fashion the Soviet model of economic development in the First Five Year Plan (1953–57), as shows an internal reading material (*neibu duwu*)<sup>58</sup> published one month

51 Weixinsiji zhi Moluotoufu han: paigian Sulian zhuanjia wenti 维辛斯基致莫洛托夫函：派遣苏联专家问题 Letter of Vyshinsky to Molotov on the Problem of Sending Soviet Experts), in: Z. Shen, *Eluosi jiemi dang'an xuanbian – Zhong-Su guanxi 俄罗斯解密档案选编—中苏关系* (Collection of declassified Russian archival documents – Sino-Soviet Relations), Shanghai 2015, vol. 4, pp. 212–214.

52 I. Goikhman, *Soviet-Chinese Academic Interactions in the 1950s: Questioning the "Impact-Response" Approach*, in: Bernstein/Li (eds.), *China learns from the Soviet Union*, p. 282.

53 D. Kaple, *Soviet Advisors in China in the 1950s*, in: O.A. Westad (ed.), *Brothers in Arms: The Rise and Fall of the Sino-Soviet Alliance, 1945–1963*, Washington 1998, pp. 117–140.

54 On the restructuring of Chinese libraries under Soviet influence in the 1950s and the ideological consequences thereof, as well as the growth rate of Russian language publication in two major libraries in Beijing see P.C. Yu, *Leaning to One Side: The Impact of the Cold War on Chinese Library Collections*, in: *Libraries & Culture* 36 (2001) 1, pp. 253–266.

55 For a list of such books, see Kaple, *Soviet Advisors in China in the 1950s*, pp. 14–18.

56 This institution still exists today, now called Institute of Scientific and Technical Information of China (中国科学院技术信息研究所).

57 Such as in physics (物理文摘), chemistry (化学文摘), mechanics (力学文摘), metallurgy (冶金文摘), mathematics (数学文摘), mechanical engineering (机械制造文摘) etc.

58 Internal reading materials were texts that were not publicly accessible, but restricted to party cadres and/or members of a distinct institution. They in most cases contained sensitive information, such as reports on other countries or information in some fields that were central to national interest.

later. The booklet *On Science Work in our Country* (*Lun wo guo de kexue gongzuo* 论我国的科学工作) includes reports of the divisions of the Chinese Academy of Sciences as well as five editorial pieces taken from the *People's Daily* (*Renmin Ribao*, from 1954 to 1955) that mention in virtually every article the superiority of the Soviet Union in scientific research. In a similar fashion did a short booklet entitled *Learning from the Soviet Experts* (*Xiang Sulian zhuanjia xuexi* 向苏联专家学习, 1953) admonish in every chapter to be thankful for the Soviet help that would surely speed up China's industrialization, may it be in the steel, petroleum or cement industry, in paper mills or in veterinary medicine.<sup>59</sup> Kaple describes in her 1994 study how the CCP translated the Soviet model into Chinese, propagating to the Chinese population that the Soviets had achieved the most advanced socialist industrial management. According to her, the Chinese did not simply import a “generic Soviet model”, but a distinct Stalinist one, i.e. a model that had resulted from the particular circumstances in the post-war era and reflected the preeminent position of Stalin. After fifteen years of war against Japanese imperialism (1931–45) and four more years of civil war against the Kuomintang (KMT) (1945–49) the CCP took over the idea that Stalin united both political power and intellectual acumen.<sup>60</sup> This was partly due to the fact that the great leader had been intervening in a number of scientific debates after the end of the Second World War.<sup>61</sup> However, his influence should not persist. A particular turning point was the year 1956 when the Chinese questioned Soviet authority for the first time.

## Questioning the Soviet Union

When Mao Zedong visited Khrushchev in Moscow on the occasion of the 40<sup>th</sup> anniversary of the October Revolution he seemingly still believed in the Sino-Soviet friendship. This becomes evident in his speech on the Moscow Airport on 2 November 1957 when he not only praised the recent Sputnik success of the Soviet Union, but also emphasized the historical significance of the 1917 revolution for guiding the Chinese people to liberation, prosperity, and strength. When addressing the Supreme Soviet of the Soviet Union on 6 November 1957 Chairman Mao pointed to the exemplary industrialization of the Soviet Union, achieving not only the completion of the first nuclear power plant and the first passenger jet plane, but also satellites and intercontinental ballistic missiles.<sup>62</sup> This positive assessment was to a large extent owed to diplomatic needs aiming at maintain-

59 Edited by Zhongguo jingji lunwenxuan bianji weiyuanhui 1953.

60 Andrew Walder even goes further when claiming in a 1982 article that Maoism was a primeval offshoot of Stalinism. See here A. Walder, Some Ironies of the Maoist Legacy in Industry, in: M. Selden / V. Lippit, *The Transition to Socialism in China*, Armonk 1982, pp. 215–237.

61 For an overview on debates ranging from the role of Hegel in the history of Marxism to Pavlov and Michurin and Stalin's efforts of removing quantum mechanics and relativity from Soviet physics, see E. Pollock, *Stalin and the Soviet Science Wars*, Princeton 2006.

62 See Mao zhuxi zai Sulian de yanlun 毛主席在苏联的言论 (Chairman Mao's Speeches in the Soviet Union), Beijing 1957.

ing a stable relationship to the Soviet neighbour. It did not reflect the profound changes caused by Khrushchev's "Secret Speech" in February 1956 that had denounced the cult and dictatorship of Joseph Stalin. Reacting to this speech shortly afterwards the editorials in the *People's Daily* expressed a growing disagreement with the De-Stalinization, thereby eventually contributing to the deterioration of the Sino-Soviet relations. At the same time, however, discussions emerged whether China was not able to formulate a different development model that was more appropriate than the Stalinist path.

In March 1956, a Committee of Scientific Development Planning (*Kexue guihua weiyuanhui* 科学规划委员会) was set up to draw a twelve-year "Outline of Developing Science and Technology between 1956 and 1967" (1956–1967 *nian kexue jishu fazhan guihua* 1956–1967 年科学技术发展规划). Its call for a campaign of "Marching towards Science" (*Xiang kexue jinjun* 向科学进军) was set up to cultivate China's own talents. Originally aiming to encourage young intellectuals to improve their professional qualification, the campaign soon expanded its agendas to promoting technological innovations among industrial workers and developing the collaboration between the worker, the scientist, and the technician. In this context the question arose who possessed the primary authority in knowledge production.

As Wang Zuoyue has shown this plan was a direct reaction to the report of a Soviet soil scientists, V.A. Kovda, in January 1955 who worked as the chief advisor to the president of the Chinese Academy of Sciences in Beijing, Guo Moruo (1892–1978). Institutionally, the plan resulted in the establishment of the State Science and Technology Commission (today the Ministry of Science and Technology). At the same time, the plan made path for introducing a of large-scale Soviet technological aid to China, arguing that technical cadres are indispensable for fulfilling the aims stated in the plan, for which a reasonable regulation of the relation of production, research, and education is necessary. Technical cadres were expected to participate in economic production without neglecting their research. Next to the dissemination of scientific knowledge among the population (*kexue puji gongzuo* 科学普及工作) the plan postulated the urge to ask the Soviet Union and foreign experts from other countries for technological assistance in underdeveloped science fields in China, to send students to the Soviet Union and other countries to study, and finally to call all Chinese foreign students back home who were still residing in capitalist countries.<sup>63</sup> This shows that science in Maoist China was in principle a highly transnational phenomenon, unconstrained by the Cold War logic. Yet, it demanded to clarify if and to what extent Soviet and other knowledges still conformed to the prevailing ideology. Owing to the impact of Kovda premier Zhou Enlai delivered in January 1956 (one month before the Secret Speech!) a speech in which he demanded to end the ambiguous political identity of intellectuals – that is, professionally trained specialists – by assigning them into the working class. This gestured towards the acknowledgement of professional knowledge in the modernization process of the PRC

63 Z. Wang, The Chinese Developmental State During the Cold War: The Making of the 1956 Twelve-year Science and Technology Plan, in: *History and Technology* 31 (2015) 3, pp. 180–205.



while opening a path for reducing the predominance of Soviet knowledge that in some cases even led to open rejection.

One of the most controversial cases in this context was Lysenkoism that had enjoyed considerable popularity in China during the years of 1948–1956. Trofim Lysenko (1898–1976) became famous for rejecting Mendelian genetics in favor of hybridization theories. He was influenced by a reading of Jean-Baptiste Lamarck (1744–1829), as well as by ideas of Ivan V. Michurin (1855–1935), the spiritus rector of Soviet biology, and propagated the latter as the true successor to Darwin. Thanks to his good relations with the political leadership Lysenko succeeded in formulating a new theory in genetics according to which all organic nature could be subjected to human will. Forces outside of organisms – and not chromosomes or genes – caused change, and the habituation of food plants to different environmental conditions (frost and aridity) could be inherited by the organism and passed down from generation to generation. In 1948 Lysenko organized the August meeting of the Lenin All-Union Academy of Agricultural Sciences (Vsesoiuznaia akademiia sel'skokhoziaistvennykh nauk imeni V.I. Lenina). His speech as president of that academy (1938–1956) “On the Situation in Biological Science” (edited by Stalin himself) led to a formal ban on teaching the genetic theories of Gregor Mendel (1822–1884), August Weismann (1834–1914), and Thomas Hunt Morgan (1866–1945). When the pro-Soviet policy in China made learning from the neighboring socialist power possible Soviet advisors tried endlessly to propagate Lysenko’s thinking in the neighboring country. Lysenko’s 1948 speech – available in Chinese translation as early as August 1949<sup>64</sup> – and the ensuing translations of Soviet publications in agricultural sciences<sup>65</sup> imported the “correct” vision of biology and genetics to China, resulting 1952 in the complete ban of Western genetics.

Due to Stalin’s support Lysenko became a transnational icon of socialist science who was in China lauded in specialist and non-specialist literature, such as in magazines like *Science for the People* (*Kexue dazhong* 科学大众), *Popular Science Monthly* (*Kexue huabao* 科学画报) and – for barely literate peasants – the *People’s Agriculture* (*Dazhong nongye* 大众农业). These magazines used huge varieties of illustrations and photos, complemented by simple texts. Though one might assume that this approach was to ensure a widespread dissemination of new knowledge, the openly visible political rhetoric in these texts – pointing out that the choice of the correct theory of genetics was a question of class struggle<sup>66</sup> – made it difficult for Chinese genetics experts to accept Lysenkoism. This was despite the fact that Soviet propaganda was busy using inspirational stories of

64 Translated by Li He 李何 and Duyi 独伊, Beijing: Tianxia tushu gongsi 1949.

65 See here the journal *Sulian nongye kexue* 苏联农业科学 (Soviet Agricultural Science) that was whole-sale translated from the Russian to the Chinese and published by the North China Agricultural Science Research Institute (Huabei nongye kexue yanjiusuo 华北农业科学研究所). Influential was also the *Zhongguo Miqulinqin xuehui huikan* 中国米丘林学会会刊 (Periodical of the Chinese Michurin Study Society) that started to introduce in its first issue of August 1950 Soviet genetics to a Chinese audience. Head of this society was Luo Tianyu 乐天学 (1901–1984).

66 See here for example the introduction in Chu Qi 褚圻, *Yichuanxue de Miqulinqin luxian* 遗传学的米邱林路线 (Genetics and Michurin’s political line), Beijing 1954.

successful peasants in order to show its superiority in both theory and practice (a point shared on the Chinese side because this biology was considered “easy to understand, easy to use”). The fact that this biology was justified by merely anecdotal evidence however raised the suspicion that it lacked scientific evidence, especially among those Chinese geneticists who had studied in Europe and the United States before the founding of the People's Republic.

Khrushchev's secret speech criticizing Stalin's cult of personality in February 1956 pushed Chinese biologists and experts in genetics to withdraw their support for Soviet science. Lysenko had already come under attack by Soviet biologists in 1952, a knowledge that had been made public in China only two years later. When the centenary of Michurin was celebrated in China in 1955 (as it was done in the Soviet Union), the official position was to safeguard his biology. The situation changed in the ensuing year when Hans Stubbe, the president of the East German Academy of Agricultural Science, lectured at Beijing Agricultural University, telling his audience that there was no scientific foundation for central tenets of Lysenko's beliefs.<sup>67</sup> In April 1956, the Soviet academician Nikolai Vasilyevich Tsytsin (1909–1980)<sup>68</sup> – a specialist in biology and agriculture – told the Chinese on his visit to the PRC when helping to draft the 12-year science and technology plan of China that Lysenko had been dismissed from his duties. These developments contributed to Mao's April 1956 speech “On the Ten Major Relationships” where he emphasized that one did not have to copy everything blindly and transplant mechanically from the Soviet Union. This speech was the final reassurance that one was able to reject Lysenko's pseudo-scientific theories.

In the end, the science philosopher and economist Yu Guangyuan 于光远 (1915–2013) organized a Genetics Symposium in Qingdao in August 1956 where the participants should openly discuss if the American Morgan or the Soviet Michurin were right.<sup>69</sup> The symposium – as the organizers claimed themselves – was the first national conference in the field of natural science that applied the ideal of the Hundred Flowers Movement (*Baihua yundong* 百花运动, 1956/57). According to its slogan “Letting a hundred flowers blossom, letting a hundred schools of thought contend” this campaign had at its core the principle of independent thinking and the freedom to criticize and debate, instead of continuing the erroneous idea that natural sciences and medicine possessed a class char-

67 After his own visit to the Lysenko Institute in Moscow Stubbe had tried to reproduce the Soviet experiments at his institute in Gatersleben, yet failed to do so. See J. Siemens, *Lyssenkoismus in Deutschland (1945–1965)*, in: *Biologie in unserer Zeit* 27 (1997), pp. 255–262; E. Käding, *Engagement und Verantwortung. Hans Stubbe, Genetiker und Züchtungsforscher. Eine Biographie*, Müncheberg 1999.

68 From 1945 until his death, Tsytsin had been the director of the Main Moscow Botanical Garden of Academy of Sciences (today named after him) and member of the Supreme Soviet of the Soviet Union (1938–1946, 1950–1954 and 1954–1958). His main field of research was the breeding of new crop varieties.

69 The according assessment in the *People's Daily* of 7 October 1956 was that both schools presented their recent discoveries one after the other before engaging in discussions. See Huang Qinghe 黄青禾 and Huang Shun'e 黄舜娥, *Yige chenggong de xueshu huiyi – ji yichuanxue zuotanhui – 一个成功的学术会议 – 记遗传学座谈会* (A successful academic conference – Reporting on the Genetics Symposium), in: *Renmin Ribao* 人民日报 (*People's Daily*), 7 October 1956.

acter. It made a two-week confrontation of both schools possible that in the end resulted in favouring Morgan over Michurin, with the defenders of the former pointing out that in the last years socialist genetics had regressed due to the lacking access to the newest developments in DNA and molecular biology research. One of the leading critiques Tan Jiazhen 谈家桢 (1909–2008) – an academician of the Chinese Academy of Science who had obtained his PhD in 1937 at the California Institute of Technology while working with Thomas Morgan on establishing the fruit fly *Drosophila* as the leading species in genetic research – pointed out that already other states had begun to see Lysenko critically. It is interesting to observe in this context that it was not the Chinese preference for practice instead of theoretical reflection that led to the rejection (given the absence of theory in Lysenkoism), but rather the insight that Michurin biology was hardly scientific, as the director of the Propaganda Department of the Central Committee of the Party Lu Dingyi 陆定一 (1906–1996) had put it in an earlier speech to scientists, social scientists, writers, and doctors.<sup>70</sup> He ensured his audience that natural science does not have a class character and that it would be wrong to equate it with politics, even though this does not mean that “science for science’s sake” were a justified standpoint. It would be wrong to assume that “traditional Chinese doctors are feudal doctors” and that “doctors of the Western school are capitalist doctors”, or that “Michurin’s theory is socialist” and that “Mendel’s and Morgan’s principles of heredity are capitalist.”<sup>71</sup> A final assessment appearing in the *People’s Daily* on 26 August 1956 concluded that the symposium succeeded in achieving a closer rapprochement of both schools.<sup>72</sup> Intriguing is here a later textbook on genetics that argues for the validity of Michurin genetics by referring to its global acceptance in both socialist and non-socialist states, among them listing Switzerland, France, England, Japan, India, Denmark, Belgium, and Italy as countries that conduct research in the field of Michurin genetics.<sup>73</sup> The emancipation from the Soviet Union was thus not a sudden, but a gradual one. The historical significance of the Qingdao Symposium clearly lies in the insight that the Soviet Union could no longer be accepted as the exclusive knowledge provider.

This assessment persisted and resurfaced in the mid-1980s when Yu Guangyuan and Gong Yuzhi 龚育之 (1929–2007) repeated their critique of superstition on the occasion of the 30<sup>th</sup> anniversary of the Hundred Schools campaign. Lysenkoism reemerged in public discussion when a new edition of the proceedings of the Qingdao Symposium was published in December 1985. Gong and Yu argued in various articles appearing between April and July 1986 in the *People’s Daily* that research in natural sciences can only

70 26 May 1956, published in the *People’s Daily* on 13 June 1956. English translation in R. Bowie/J. Fairbank (eds.), *Communist China 1955–1959. Policy Documents with Analysis*, Cambridge, MA, 1965, pp. 151–163.

71 *Ibid.*, pp. 156–157.

72 See the report on the success of the Symposium in the *People’s Daily*, *Yichuanxue zuotanhui zai Qingdao jieshu – kexuejiamen jiaoliu jingyan quchang buduan huxiang tigao 遗传学座谈会在青岛结束 科学家们交流经验取长补短互相提高* (The Genetics Symposium in Qingdao has ended – Scientists exchanged their experiences and made progress by learning from each other), in: *Renmin Ribao*, 26 August 1956.

73 See Zhang Dongsheng 张冬生 and Zhang Zhenhua 章振华, *Miqiulin yichuanxue 米丘林遗传学* (The Genetics of Michurin), Beijing 1961, p. 10.

be successful if free of politic influence. In the abstract of an article that remembers the achievements of the Qingdao Symposium it reads accordingly:

*The fundamental accomplishments gained at the Qingdao Conference were (1) Scientific arguments must be strictly distinguished from political issues, and free discussion be fully encouraged in settling differences in scientific arguments (2) Freedom of expression, especially exchanging ideas concerning scientific endeavours within the academic circles, must be guaranteed and democracy, the prerequisite of such freedom, must be exercised.<sup>74</sup> (3) Scientific arguments must be based on the results of research. (4) Conclusions on scientific pursuits can only be reached by scientists themselves.<sup>75</sup>*

Such view is undoubtedly a reflection of the liberalization of academia after the end of the Mao era, yet the symposium in 1956 had already given Tan the opportunity to call for the restoration of the autonomy of science by emphasizing that natural science is a universal language. Seeing how Lysenko had used his relationship to Stalin in order to propagate his ideas the symposium's participants concluded that the absence of political intervention was an indispensable element of scientific progress.

While scientific freedom was justified by the Hundred Flowers Campaign, another, even more important, factor was that the Chinese reference to scientific findings of other countries beyond the Soviet Union avoided the scientific nativism of Michurin who – in the Soviet understanding – had been able to develop his theory without being influenced by foreign bourgeois science.<sup>76</sup> Lu Dingyi pointed out in his speech of 26 May 1956 (that is, three months before the Qingdao Symposium) that Chinese scientists should not accept whole-sale westernization and thereby advocate a national nihilism. Learning from the Soviet Union was certainly correct, yet “besides learning from the Soviet Union, we must also learn from the People's Democracies. Every People's Democracy has its own special merits.”<sup>77</sup> It thus did not come to surprise that the Qingdao genetics symposium proposed to the CCP to invite European genetics experts to China to give lectures, to send Chinese delegations to Europe, America, and the Soviet Union to learn the newest developments in biology, and finally to translate publications in biology from all countries into Chinese.<sup>78</sup> After all, the aim was to develop genetics to such an extent that it could reach international standards in the coming twelve years, argued Tong Dizhou 童第周 (1902–1979), the chairman of the symposium in his opening speech on 10 August

74 Democracy refers here to the absence of autocracy in scientific discourse. According to the Maoist ideal of mass science peasants and workers could make valuable contributions in the process of knowledge production. Science was thus less experts' science than people's science (renmin kexue 人民科学).

75 Li Peishan 李佩珊, Meng Qingzhe 孟庆哲, Huang Qinghe 黄青禾, Huang Shun'e 黄舜娥, Qingdao yichuanxue zuotanhui de lishi beijing he jiben jingyan 青岛遗传学座谈会的历史背景和基本经验 (The historical background and general experiences of the Qingdao Genetics Symposium), in: Ziran bianzhengfa tongxun 自然辩证法通讯 (Journal of Dialectics of Nature) (1985) 4, pp. 41–49, 79, here p. 79.

76 L. Schneider, Lysenkoism in China: Proceedings of the 1956 Qingdao Genetics Symposium: Editor's Introduction, in: Chinese Law and Government 19 (1986) 2, p. vi.

77 Bowie/Fairbank, Communist China 1955–1959, pp. 161.

78 In addition, the new role of genetics was also institutionalized by establishing a National Professional Organization of Geneticists and a Genetics Institute at the Chinese Academy of Sciences.

1956. The symposium was in effect an important event that helped Chinese scientists to emancipate themselves from the Soviet Union and look further for adequate sources of knowledge, and they succeeded in doing so quicker than the German Democratic Republic that achieved a liberation of biology only in the 1970s.<sup>79</sup> They seized the opportunity provided by the Hundred Flowers Campaign during which Maoist science epistemology reinforced the view that the search for legitimate knowledge was an endless dialectical process that could impossibly restrict itself to the neighbouring socialist power.

### Turning away from the Soviet Union

The insights detailed above caused Chinese science planners to turn away from the Soviet Union and to generate a growing interest in other countries within and beyond the Eastern bloc. As described by Jersild the Soviet advisors on *komandirovka*<sup>80</sup> in China were often considered being arrogant and colonial in attitude, enjoying a luxurious lifestyle compared to the Chinese people, quickly reminding the receiving nation that the Soviets' aid was by no means selfless, nor were the red experts representing the most intimate friend of China. Growing conflicts where Russian technicians and experts failed to achieve the promised aims due to drunkenness, laziness or because they committed crimes<sup>81</sup> certainly contributed to the growing split between China and the Soviet Union, yet did not become directly detrimental to the image of the big brother. Rather, the appreciation of the Soviet Union providing modernity in principle persisted, but was modified so that socialist modernity no longer necessarily meant Soviet modernity.

It is in this sense that premier Zhou Enlai 周恩来 (1898–1976) and marshal Nie Rongzhen 聂荣臻 (1899–1992) of the People's Liberation Army established in October 1956 the Institute of Scientific and Technical Information of China 中国科学技术情报研究所.<sup>82</sup> Its primary task was to gather global technological knowledge and to introduce it to Chinese scholars and experts, and doing so meant first of all to translate foreign materials. Starting in 1955, the institute issued the *Bibliography of Translated Texts in Science and Technology* (*Kexue jishu yiwen tongbao* 科学技术译文通报), and in December

79 See the findings of I.J. Polianski, Das "Lied vom Anderswerden" – Der Lysenkoismus und die politische Semantik der Vererbung, in: Osteuropa 10 (2009), pp. 69–88.

80 The system of *komandirovka*, or work-related travel, included the deployment of advisors throughout the bloc and can be understood as a continuation of Russian imperial practices. See Jersild, *The Sino-Soviet Alliance*, p. 28.

81 *Ibid.*, pp. 43–46.

82 Renamed to Institute of Scientific and Technical Information of China 中国科学技术信息研究所 (ISTIC) in 1992 this institute exist still today and is the largest electronic database for academic publications and statistic data, ranging from journals, dissertations and conference proceedings to patents and information on Chinese companies in the fields of Chinese studies (arts/humanities/social sciences), TCM (Traditional Chinese Medicine), Chinese Business, Law, Government, Defense, Military, Science, and Technology etc. ([www.wanfangdata.com.cn](http://www.wanfangdata.com.cn)). It is also the responsible institution for providing access to international academic databases, ranging from Nature to Springer to ProQuest, Oxford Academic Journals and Lexis, see <http://www.istic.ac.cn/suoguan/web.htm> [20.02.2018].

1957 the journal *Scientific & Technological Information Work* (*Keji qingbao gongzuo* 科技情报工作) that was two years later complemented by an English-language serial *Science abstracts of China* 中国科学文摘 addressing different science fields, ranging from medicine to earth sciences and biological sciences. Their declared transnational perspective was meant to go beyond the Soviet Union as the sole or the primary source of knowledge. The need to do so was justified by the simple fact that the USSR was not necessarily the most advanced of the socialist countries, a circumstance recognized by the Chinese leadership when the Soviet Union under Khrushchev intensified its exchange with Central Europe in the search for new knowledge and technologies. At the same time, the big brother started to show interest in the Western colonial heritage in China dating from the pre-1949 era that could possibly provide access to knowledge from non-socialist countries that was difficult to obtain given the geopolitical situation.<sup>83</sup> The technological superiority of Central European states was not only recognized by the USSR and China but also consciously pushed by the socialist states of Czechoslovakia, Poland, and Romania. The growingly complex relationships between these countries and the Soviet Union in the wake of the 1956 uprisings in Poland and Hungary – seen by China as a first sign of their political emancipation from Moscow – had a considerable impact on Chinese foreign policy behaviour in the East European socialist camp. While in the case of Poland the CCP warned the Soviets not to intervene to oust the nationalist Communist government under Władysław Gomułka, it supported the efforts in Hungary to destroy the counterrevolutionary forces and to reinstall Communist rule, before breaking radically with the USSR in the 1958 alignment of Albania with the CCP's policy of de-Stalinization and peaceful coexistence.<sup>84</sup>

Mao Zedong justified the Chinese engagement in the affairs of the Warsaw Pact by a reference to his theory of contradiction originally developed in the 1930s. During the Yan'an era when the CCP resided in a remote and isolated mountainous area in northern Shaanxi after the Long March (1934–1935), the Party's chairman had written his piece *On Contradiction* (*Maodulun* 矛盾论, August 1937).<sup>85</sup> It became the most central theoretical text guiding political campaigns before and after the founding of the PRC. Based on a reading of Lenin's "Conspectus of Hegel's *Lectures on the History of Philosophy*" it argued that "law of contradiction in things, that is, the law of the unity of opposites, is the basic law of materialist dialectics", pointing out to different kinds of contradiction that in political struggle need to be identified correctly:

*As opposed to the metaphysical world outlook, the world outlook of materialist dialectics holds that in order to understand the development of a thing we should study it internally and in its relations with other things; in other words, the development of things should be seen as their internal and necessary self-movement, while each thing in its movement*

83 Jersild, *The Sino-Soviet Alliance*, p. 61.

84 For an overview see J.W. Graver, *China's Quest. The History of the Foreign Relations of the People's Republic of China*, Oxford 2016, pp. 113–145.

85 Mao Zedong, *On Contradiction*, in: *Selected Works of Mao Tse-tung*, vol. 1, pp. 311–347.

*is interrelated with and interacts on the things around it. The fundamental cause of the development of a thing is not external but internal; it lies in the contradictoriness within the thing. There is internal contradiction in every single thing, hence its motion and development.*<sup>86</sup>

Rejecting the metaphysical variation of the law of the development of the universe and regarding contradiction as an essentialist characteristic of every phenomenon Mao insists that research into world affairs is an ever-continuous process. Declaring in his text *On Practice* (1937) that rational knowledge cannot exist independently or be derived solely from reason there can be no authority in defining what is correct or legitimate knowledge, and accordingly there is no end in scientific research. If there were one, it would constitute an end to science itself where the last knowable thing can only be metaphysically founded.

In February 1957 Mao refined his view on contradictions, pointing out in his speech “On the correct handling of contradictions among the people” (*Guanyu zhengque chuli renmin neibu maodun de wenti* 关于正确处理人民内部矛盾的问题) differences between non-antagonistic and antagonistic contradictions. While the former could be overcome by adequate ideological education, the latter was irreconcilable: one could under no circumstance cooperate with a capitalist individual or an imperialist country.<sup>87</sup> Celebrated in Eastern Europe this speech showed a way how to acknowledge differences among socialist systems without feeling the authoritarian need to suppress deviations from the Soviet model.<sup>88</sup> After all, Maoist dialectics held that there was always a unity of opposites, as Mao put it in his 1956 speech at the Second Plenary Session of the Eighth Central Committee of the Communist Party of China on 15 November 1956:

*Everything in the world is a unity of opposites. By the unity of opposites we mean the unity of opposite things differing in nature. For instance, water is a combination of two elements, hydrogen and oxygen. If there were only hydrogen and no oxygen, or vice versa, water could not be formed. Over a million compounds are said to have already been named and no one knows how many have not yet been. All compounds are unities of opposites differing in nature. Likewise with things in society. The relationship between*

86 Ibid., p. 313.

87 In this speech (presented to the Eleventh Session (Enlarged) of the Supreme State Conference in February 1957 and published in June 1957), Mao insisted on the positive results of the events in Poland and Hungary: “In our society, as I have said, disturbances by the masses are bad, and we do not approve of them. But when disturbances do occur, they enable us to learn lessons, to overcome bureaucracy and to educate the cadres and the masses. In this sense, bad things can be turned into good things. Disturbances thus have a dual character. Every disturbance can be regarded in this way. Everybody knows that the Hungarian incident was not a good thing. But it too had a dual character. Because our Hungarian comrades took proper action in the course of the incident, what was a bad thing has eventually turned into a good one. Hungary is now more consolidated than ever, and all other countries in the socialist camp have also learned a lesson.” See Mao Zedong, *On the Correct Handling of Contradictions among the People*, in: *Selected Works of Mao Tse-tung*, vol. I, p. 416.

88 See A.S. Whiting, *The Sino-Soviet Split*, in: R. MacFarquhar / J.K. Fairbank (eds.), *The Cambridge History of China*, vol. 14: *The People's Republic of China, Part 1: The Emergence of Revolutionary China 1949–1965*, Cambridge, UK 1987, pp. 478–538.

*the central and the local authorities is a unity of opposites, and so is that between one department and another.*

*The relationship between two countries is also a unity of opposites. China and the Soviet Union are both socialist countries. Are there any differences between them? Yes, there are. The two countries are different in nationality. Thirty-nine years have gone by since the October Revolution took place, whereas it is only seven years since we won state power throughout the country. As for the things each has done, they are different in many ways. For instance, unlike theirs our agricultural collectivization has gone through several stages, our policy towards the capitalists is different from theirs, so are our market price policy and the way we handle the relationship between agriculture and light industry on the one hand and heavy industry on the other, and so are our army system and Party system. We have told them: We don't agree with some of the things you have done, nor do we approve of some of the ways you handle matters.<sup>89</sup>*

The same year saw the publication of the periodical *Bulletin of the Studies of Dialectics of Nature* (*Ziran bianzhengfa yanjiu tongxun* 自然辩证法研究通讯) whose declared aim was to equip the scientists with the “weapon of materialist dialectics” for seeking truth (*zhenli* 真理). It provided scientists with an ideological justification to search for knowledge beyond the Soviet Union at a time when their country was beginning to emancipate itself and to regain influence in global affairs. It would be however wrong to assume that this reorientation occurred only after Khrushchev's secret speech or as a consequence of the Sino-Soviet split. Rather, East European countries played an active role in diversifying access to scientific and technological knowledge, an aspect that is often neglected in the growing literature on Sino-Soviet relations in recent years.<sup>90</sup>

For instance, when Poland and China agreed to sign an Agreement on technological cooperation (*Zhong-Bo jishu he jishu kexue hezuo xieding* 中波技术和技术科学合作协定) in 1954 and an Agreement on Cultural Cooperation (*Zhong-Bo wenhua hezuo xieding* 中波文化合作协定) in February 1955, the Polish embassy in Beijing started in the same year to publish a journal entitled *Knowledge on Poland* (*Bolan zhishi* 波兰知识).<sup>91</sup> It ran a number of articles that boasted the Soviet contribution to Poland's development, emphasizing that Poland had already surpassed the technological level of Italy,<sup>92</sup> and praising the global reputation of Polish natural sciences when noting that the American academic journal *Mathematical Reviews* published papers of Polish mathema-

89 Mao Zedong, Speech at the Second Plenary Session of the Eighth Central Committee of the Communist Party of China, 15 November 1956, in: Selected Works of Mao Tse-tung, vol. V, p. 339.

90 See here Bernstein/Li (eds.), *China learns from the Soviet Union*; M. Sleeboom-Faulkner, *The Chinese Academy of Science (CASS) – Shaping the Reforms, Academia and China*, Leiden 2007; Shen/Xia, *Mao and the Sino-Soviet Partnership*.

91 The version available to the author was a donation by the Polish embassy to the library of the Shanghai Institute of Finance and Economics 上海财政经济学院.

92 *Bolan jishu kexue de gaishu* 波兰技术科学的概述 in: *Knowledge on Poland* 波兰知识 (*Miesięcznik Polski*) 2 (1955), pp. 12–14.



ticians.<sup>93</sup> The task of the day then was according to the journal to intensify the relations and exchange between both countries, as the Polish ambassador to Beijing, Stanisław Kiryłuk, told in a speech when awarding Guo Moruo 郭沫若 (1892–1978) (in April 1953 the Chinese delegate to the funeral ceremonies for Stalin and the first President of the Chinese Academy of Sciences from its founding in 1949 until his death) the title of a member of the Polish Academy of Sciences on 28 December 1954. Kiryłuk lauded the achievements of Chinese science and technology in the past, emphasizing that Chinese successes in scientific research are Poland's successes as well. In his acceptance speech Guo told the audience that China was willing to learn from Poland because the country had absorbed Soviet knowledge, and learning from Poland would mean strengthening Sino-Soviet friendship.<sup>94</sup> While such statement was a lip-service to the big brother in the East the journal itself continued to strengthen Poland's reputation when praising the advanced optical glasses produced in Poland that were – based on German technology – exported to the Soviet Union, China, and Hungary.<sup>95</sup> A similar image is painted in the *Czechoslovakia Pictorial* (*Jiekesiluofake huabao*) where the country boasted itself to be the second-largest producer of brown coal in the world, and the largest producer of motorcycles worldwide,<sup>96</sup> that is an advanced industrialized country that seemingly is even able to take over tasks in global development, such as exporting advanced cranes and tractors to China.<sup>97</sup> Appearing almost simultaneously in China the magazines *Knowledge on Poland* and *Czechoslovakia Pictorial*, which were published by the Polish and the Czechoslovakian government respectively in their efforts to emancipate themselves while hoping for Chinese support, appealed to their readers that the Soviet Union was not the only country to consult in the process of modernization.

While it is extremely difficult to estimate the true impact of knowledge transfers from these countries (primarily due to only scarce documentation beyond the propagandistic pictorials and due to the current lack of access to historical archives of the PRC era) these observations exemplify how the Chinese modernization process did not focus exclusively on the Soviet Union as implied by the slogan “The Soviet Union of today is our tomorrow.” A closer look at the activities of the Institute of Scientific and Technical Information of China shows that Maoist China also did not follow the logic of the Cold War where only socialist countries could be emulated. Not only were the years

93 Kexue wei shenghuo fuwu 科学为生活服务 (Science has to serve life), in: *Knowledge on Poland* (*Miesięcznik Polski*) 3 (1955), pp. 13–16.

94 Bolan zhu Hua dashi Jililuoke – daibiao Bolan kexueyuan shouyu Guo Moruo yi yuanshi xuewei 波兰驻华大使基里洛克 – 代表波兰科学院授予郭沫若以院士学位 (The Polish Ambassador to China Kiryłuk represents the Polish Academy of Sciences in awarding Guo Moruo the title of an academician), in: *Knowledge on Poland* 波兰知识 (*Miesięcznik Polski*) 1 (1955), pp. 8–9.

95 Bolan de jimi yiqi he guangxue gongye 波兰的精密仪器和光学工业 (Poland's precision instruments and optics industry), in: *Knowledge on Poland* (*Miesięcznik Polski*) 9 (1956), pp. 23–24.

96 Cong shuzi zhong kan Jiekesiluofake 从数字中看捷克斯洛伐克 (Seeing Czechoslovakia from numbers), in: *Czechoslovakia Pictorial* 捷克斯洛伐克画报 2 (1958).

97 See Wei Zhongguo pengyou shengchan jiqi 为中国朋友生产机器 (Producing Machines for our Chinese Friends), in: *Czechoslovakia Pictorial* 2 (1955).

before the Great Leap Forward characterized by a considerable openness to the global scientific community, but also the radical push for economic development during the GLF – a movement that has often been described as an irrational movement characterized by a conscious renunciation of scientific modernity<sup>98</sup> – did not hinder the Institute of Scientific and Technical Information of China in its quest for new knowledge, which is particularly visible in its decision in 1959 – at the height of the GLF movement – to push its internationalization by complementing its publications with an English-language serial *Science abstracts of China* (*Zhongguo kexue wenzhai* 中国科学文摘). In the following years – also during the Cultural Revolution that has long wrongly assumed to have been anti-scientific in nature<sup>99</sup> – it provided summaries of foreign publications in a large number of indices, bulletins, and catalogues of foreign materials on science and technology, such as the *Indices of Scientific and Technological Documents* 科技文献索引 (1963), the *Bulletin of Translated Texts of Science and Technology* 科学技术译文通报 (starting publication in 1964), the *Catalogue of Foreign Materials on Science and Technology* 国外科技资料目录 (1975), the *Science and Technology Reference News (Part of Foreign Countries)* 科技参考消息 (国外部分) (1965–67), the *Comprehensive Overview on Trends in Foreign Science and Technology* 国外综合科技动态 (1962–1963), or the *Internationally Standardized Index of Journal Articles 1951–1961* (国外标准化期刊论文索引1951–1961) (1963).<sup>100</sup>

## Conclusion

These examples reveal how Maoist China avoided – both before and after the split from the Soviet Union – to limit itself to Soviet knowledge in its modernization agenda. Instead, it consciously pursued a global search of knowledge that even went beyond the socialist bloc. With his emphasis on practice as the true criteria of knowledge Mao Zedong maintained an open attitude towards new knowledges, eventually leaving behind the exclusive dependency on the Soviet Union while establishing academic institutions that were dedicated to the search and translation of scientific and technological knowledge from all over the world, including capitalist countries. The very pragmatic attitude in choosing knowledge independent of its political or cultural context seems to imply that ideological considerations only played a minor role when transferring knowledge; the rare exception being cases in mathematics and physics where Albert Einstein's theory of general relativity and the standard model of particle physics were rejected, for instance.

98 For this assessment see F. Dikötter, *The history of China's most devastating catastrophe, 1958–62*. London 2010; Yang Jisheng, *Tombstone: The Untold Story of Mao's Great Famine*, London 2012; F. Wemheuer, *Steinnudeln: Ländliche Erinnerungen und staatliche Vergangenheitsbewältigung der "Grossen Sprung"-Hungersnot in der chinesischen Provinz Henan*, Frankfurt am Main 2007.

99 Contrary here the findings of Wei and Brock who describe in detail the scientific breakthroughs in that era, see Wei/Brock (eds.), *Mr. Science and Chairman Mao's Cultural Revolution*, pp. 1–118.

100 These publications have escaped the historians' attention so far, yet will become part of a future project dealing with transnational knowledge transfers in the Cold War era.

Such rejection was grounded epistemologically and focused more on the function of science in modernization than on its ideological purity.<sup>101</sup> The true nature and impact of transnational knowledge transfers from and to China are, however, still insufficiently researched. To fill this lacuna by identifying all the important actors, their academic institutions and their global movement in education and research as well as their interaction with each other will undoubtedly contribute to more thorough and truly global history of knowledge transfers in the Cold War era, a history that still remains to be written.

101 See Hu Dalian, *The Reception of Relativity in China*, in: *Isis* 98 (2007) 3, pp. 539–557; M.A. Matten, *Coping with Invisible Threats: Nuclear Radiation and Science Dissemination in Maoist China*, in: *East Asian Science, Technology and Society* 12 (2018) 3, pp. 235–256.