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Brief Encounter: Acupuncture, Pavlov, and Scientific Exchange between China and the Soviet Union, 1949-1961

Liang Wan (University of Exeter), Simon Huxtable (Birkbeck, University of London) and Sarah Marks (Birkbeck, University of London)

Abstract

This article traces exchanges of personnel, knowledge, and practice of Traditional Chinese Medicine (TCM) between China and the Soviet Union during a brief window of Sino-Soviet friendship in the 1950s and '60s. It argues that TCM theory was re-shaped by incorporating Pavlovian theories to modernize and validate acupuncture through a theory of mechanisms of higher nervous activity, with the framework of holism, specific research methods and concepts such as "biologically active points" becoming sedimented within the TCM system. In turn, Soviet medicine embraced acupuncture, with its use enduring long after the Sino-Soviet split of 1959, in-keeping with the internationalist spirit of the Soviet Scientific-Technological Revolution. The article challenges theories of Soviet scientific exchange as "imperial scavenging," demonstrating that China was as much an active agent in these interactions, with both sides making use of each other's expertise for their own ends, often with mutual respect and enthusiasm.

"Acupuncture is the pioneer of the scientization of Chinese medicine," wrote Zhou Weixin (周味辛), an enthusiast of traditional Chinese medicine in May 1952.[1] For Zhou – and for others – the hope was that acupuncture would spearhead a campaign to modernize traditional medicine. The vehicle for this would be the works of Soviet physiologist Ivan Pavlov, who would soon become the subject of a state-sponsored movement. As Zhu Lian (朱琏, 1909-1978), Head of the Experimental Acupuncture Institute in Beijing, wrote in a canonical textbook in 1954: "Pavlov's doctrine of higher neural activity has plenty of valuable inspiration for our research on acupuncture therapy and, at the same time, acupuncture therapy can provide more important empirical evidence for Pavlov's theory."[2] A few years later in Kyiv, prominent Soviet scientists began to state that acupuncture could validate Pavlovian ideas. Georgii Fol'bort and his research student Anatoly Podshibiakin argued that acupuncture, by illustrating the connections between internal organs and skin

[1] Zhou Weixin, "Reply to Mr. Song Xiangyuan [敬答宋向元先生]," *New Chinese Medicine* 3, no. 5 (1952): 99.

[2] Zhu Lian, *The New Acupuncture* [《新针灸学》], 2nd ed. (Beijing: People's Medical Publishing House, 1954), preface, 24.

surface, could confirm Pavlov's ideas of trophic reflexes and the tenets of "nervism".[3] Over the next few years, a wave of research took place in Soviet scientific institutions that sought to understand acupuncture's mechanisms and investigate its efficacy in treating a range of conditions.

In the 1950s and 1960s, contacts between medical practitioners in China and the Soviet Union intensified, with a spirit of scientific friendship and curiosity from individual scientists themselves. This article explores the history of those exchanges, from the establishment of the People's Republic of China in 1949 to the early 1960s, by which time the Sino-Soviet split had disrupted scientific communication. Acupuncture offers a counter-example to existing histories of the relationship between China and communist states in Europe. While Austin Jersild has suggested that "[t]he Soviets were largely the givers of advice and instruction" and "[t]he Chinese were largely the recipients," this article reveals a bi-directional exchange of scientific knowledge and expertise in which the identity of giver and receiver was blurred.[4] Throughout the 1950s – and into the early 1960s – experts from China and the USSR travelled for fact-finding visits as part of a vibrant exchange of information, and helped to lay roots for acupunctural practice in the Soviet Union.

This article sheds light on the possibilities and limits of scientific exchange during a narrow window of historical opportunity. In the early 1950s, China saw Pavlovian ideas as a vehicle for the "scientization" of Traditional Chinese Medicine (TCM).[5] While these exchanges began during late Stalinism, the "Thaw" of the Khrushchev era witnessed greater openness to foreign exchange and created opportunities for scientists and medical practitioners to engage with a wider range of scientific ideas and practices. While this window of opportunity had narrowed significantly by the early 1960s – and had closed almost completely by the time of the Chinese Cultural Revolution (1966-1976) and Sino-

[3] Georgii Fol'bort and A.K. Podshibiakin, "Aktivnye tochki kozhi i chzhen'-tsiu terapiia," *Meditskinskii rabotnik*, July 16, 1957, 4.

[4] Austin Jersild, *The Sino-Soviet Alliance: An International History* (Chapel Hill: University of North Carolina Press, 2014), 208.

[5] The term *Traditional Chinese Medicine* (TCM) is commonly used in academic literature to refer specifically to the state-sponsored, standardized system of Chinese medicine institutionalized in the People's Republic of China after the mid-twentieth century. See Kim Taylor, *Chinese Medicine in Early Communist China, 1945-1963* (London: Routledge, 2005), especially chapter 3; also Ralph Croizier, *Traditional Medicine in Modern China: Science, Nationalism, and the Tensions of Cultural Change* (Cambridge, MA: Harvard University Press, 1968), 189-209; Sean Hsiang-lin Lei, *Neither Donkey nor Horse: Medicine in the Struggle over China's Modernity* (Chicago: University of Chicago Press, 2014). Anthropologists have also shed light on the ongoing adaptation, innovation, and global engagement of TCM in the latter half of the twentieth century. See Elisabeth Hsu, *The Transmission of Chinese Medicine* (Cambridge: Cambridge University Press, 1999); Volker Scheid, *Chinese Medicine in Contemporary China: Plurality and Synthesis* (Durham and London: Duke University Press, 2002); and Mei Zhan, *Other-Worldly: Making Chinese Medicine through Transnational Frames* (Durham and London: Duke University Press, 2009).

Soviet border war (1969) – we show that its legacies were long-lasting both in China, where physiological terminology and research methodologies were absorbed, and in the Soviet Union, where it birthed a small-but-significant community that continued to theorize and practice Chinese medicine for decades to come.

We argue that this narrow chronological window of opportunity was facilitated by resonances in Soviet and Chinese policies towards science and medicine by the mid-1950s. In China, there was new belief that modernization of theory and practice required engagement with concepts and technologies from outside the Chinese tradition. While the value of some western ideas was impossible to ignore, theories from the Soviet Union had higher political value: the idea of a modern trans-communist, Sino-Soviet scientific amalgam that could transcend western science and medicine was a seductive narrative at state-level and for a number of researchers.[6] This international hybridization, with ideas from Soviet innovations such as "biologically active points," had a long-lasting impact on the modern formulation of TCM.[7] In parallel, in the post-Stalinist Soviet Union there was a new impetus to understand how recent developments in science and technology were revolutionizing society and its implications for socialism – especially in a post-war world that was rapidly being transformed by developments such as atomic energy, satellite and space technologies, antibiotics and the discovery of the structure of DNA. The so-called Scientific Technological Revolution (STR), a term coined in 1955 by Soviet minister Nikolai Bulganin, drawn from the British Marxist scientist and theoretician J.D Bernal, prioritized science –a superior Soviet version of it – as a key driving force in the development of socialist society, over and above the application of orthodox Marxist-Leninist ideology. The STR also necessitated looking outwards to international developments asameans to ensure that Soviet science and medicine were at the forefront. While this meant a new-found openness to western scientific research, it was also an impetus for exchange with Asia – especially China – given the political friendship between the two countries at that moment.[8]

This article builds on scholarship on Chinese Medicine, Cold War scientific diplomacy, and the history of medical theory by showing how China influenced the development of acupuncture in the Soviet Union. It is notable that the major recent monograph on China's Cold War scientific diplomacy gives limited attention to medicine,

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[6] Zuoyue Wang, "The Cold War and the Reshaping of Transnational Science in China," in *Science and Technology in the Global Cold War,* ed. Naomi Oreskes and John Krige (Cambridge: MIT Press, 2014), 343-379.

[7] For a general analysis, see Haiwei Yang and Huili Zhang, "Pavlovian Theory and the Development of Traditional Chinese Medicine, 1949-61," *History and Philosophy of the Life Sciences* 46, no. 47 (2024): 1-24, https://doi.org/10.1007/s40656-024-00632-8.

[8] For more on the STR see Stephan Guth, "One Future Only. The Soviet Union in the Age of the Scientific-Technical Revolution," *Journal of Modern European History* 13, no. 3 (2015): 355-376, https://doi.org/10.17104/1611-8944-2015-3-355.

with acupuncture absent from its discussion. We challenge this lacuna, demonstrating lasting effects on medicine for both partners.[9] Existing research on Sino-Soviet acupuncture exchanges mainly focuses on the adoption, and subsequent rejection, of Pavlovian science in China. Xi Gao has examined the rise and fall of the Chinese "learn from Pavlov" campaign, while Ka-Wai Fan has shown some of the epistemological tensions resulting from the adoption of Pavlovian ideas in China.[10] Other scholarship has looked more closely at high politics, showing how the CCP leadership saw Pavlovian ideas as a vehicle for the modernization of TCM.[11] Focusing on the Soviet-Chinese relationship as a mutual exchange of expertise, rather than a neo-colonial imposition of a foreign framework on a subordinate partner, allows us to rethink how knowledge and people travelled during this brief alliance.[12]

A wave of detailed, archivally-informed scholarship offers a clear-sighted picture of the tensions within the Sino-Soviet relationship, but also what was, for a time, a close and keenly felt relationship.[13] In the areas of science, medicine and technology, the scale of exchange in relation to personnel, materials and knowledge was unprecedented. In the words of Xin Li, co-operation in these fields, "not only laid the foundation for industrialization in China but also served as the greatest example of comprehensive technology transfer in history." [14] Austin Jersild's detailed study of the Sino-Soviet relationship, which examines both high-level politics and ties forged on the ground, shows that tensions between China and the Soviet Union were present from the start, stemming mainly from the Soviet Union's heavy-handed "colonial" mindset.[15] Yet this article endorses Elizabeth McGuire's assertion that, for a time, the Sino-Soviet relationship could be

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[9] Gordon Barrett, *China's Cold War Science Diplomacy* (Cambridge: Cambridge University Press, 2022).
[10] Xi Gao, "Learning from the Soviet Union: Pavlovian Influence on Chinese Medicine, 1950s," in *Public Health and National Reconstruction in Post-War Asia: International Influences, Local Transformations*, ed. Liping Bu and Ka-che Yip (London: Routledge, 2015), 72-89; Ka-wai Fan, "Pavlovian Theory and the Scientification of Acupuncture in 1950s China," in *New Perspectives on the Research of Chinese Culture (Vol. 1)*, ed. Ka-wai Fan, P. Cheng (Singapore: Springer, 2013), 137-145.
[11] Kim Taylor, *Chinese Medicine*, 53-56; Yang and Zhang, "Pavlovian Theory and the Development of Traditional Chinese Medicine, 1949-1961," 1-24.
[12] On the Sino-Soviet alliance as an imperial relationship see Yang and Zhang, 8; Jersild, *The Sino-Soviet Alliance,* 9-12 and *passim*.
[13] The best general works on the conflict are Lorenz M. Lüthi, *The Sino-Soviet Split: Cold War in the Communist World* (Princeton: Princeton University Press, 2008); Sergey Radchenko, *Two Suns in the Heavens: The Sino-Soviet Struggle for Supremacy* (Stanford: Stanford University Press, 2009). On scientific cooperation see Jiuchen Zhang and Feklova T. Yu, "Soviet Scientists in Chinese Institutes; Historical Study of Cooperation Between the Two Academies of Scientists in 1950s," *Endeavour*, 42, no. 1 (2018): 17-26, https://doi.org/10.1016/j.endeavour.2018.02.001; Liu Jinyan, Wang Fang, Alexey Zhemchugov, "Chinese Scientists in Dubna (1956-1965)," *Chinese Annals of History of Science and Technology* 5, no. 2 (2021): 31-88, https://doi.org/10.3724/SP.J.1461.2021.02031
[14] Xin Li, "Science Diplomacy in China: Past, Present, and Future", *Cultures of Science* 6, no. 2 (2023): 173, https://doi.org/10.1177/20966083231183473
[15] Jersild, *The Sino-Soviet Alliance*.

considered a kind of "romance," consolidated by the common project of building communism.[16] Soviet scholars collaborated with Chinese colleagues and considered them to be friends. These affective dimensions were an important part of the Sino-Soviet relationship and should not be dismissed.

This article not only illuminates the relationship between the Soviet Union and China, but builds on Dora Vargha's recent injunction to re-integrate the socialist world into the history of global medicine.[17] Exploring the exchange of knowledge about acupuncture between the two countries shows that the relationship between Soviet and Chinese scientists was, for a time, based on mutual friendship and, far from a colonial extraction of knowledge, based on a genuine Soviet interest in Chinese culture. At the same time, focusing on the creative use of Pavlovian ideas by Chinese scholars challenges the idea, once dominant, of a top-down diffusion of knowledge from the west to China.[18] In fact, the case of acupuncture provides another example of how China not only actively shaped international knowledge production but also sought to steer knowledge and expertise in directions that suited the state's purposes.[19]

"Learn from Pavlov"

Chinese communists were not always enthusiasts for Soviet medicine. During the Chinese civil war (1946-1949), medical officials of the Chinese Communist Party (CCP) welcomed international exchange without regard for ideology. He Cheng (贺诚, 1901-1992), one of the primary directors in the CCP's medical department, argued in 1948 that medical workers should "welcome progress in any field of science in the world, no matter the country from

[16] Elizabeth McGuire, *Red at Heart: How Chinese Communists Fell in Love with the Chinese Revolution* (New York: Oxford University Press, 2017) and "Sino-Soviet Romance: An Emotional History of Revolutionary Geopolitics," *Journal of Contemporary History* 52, no. 4 (2017): 853-873, https://doi.org/10.1177/0022009417730894. See also John M. Knight, "Mandated Internationalism: Sino-Soviet Friendship 1949-1956," *Twentieth Century Communism* 19 (2020): 26-60, https://doi.org/10.3898/175864320830900536.

[17] Dora Vargha, "Missing Pieces: Integrating the Socialist World in Global Health History," *History Compass* 21, no. 7 (July 2023): 1-8, https://doi.org/10.1111/hic3.12779. See also Bogdan C. Iacob, "Health," in *Socialism Goes Global: The Soviet Union and Eastern Europe in the Age of Decolonization,* ed. James Marks and Paul Betts (Oxford: Oxford University Press, 2022), 255-289.

[18] Challenging this paradigm see Izabella Goikhman, "Soviet-Chinese Academic Interactions in the 1950s," in *China Learns from the Soviet Union, 1949-Present*, ed. Thomas P. Bernstein and Huayu Li (Lanham: Lexington Books, 2010), 282-290.

[19] Lu Chen, "China in the Worldwide Eradication of Smallpox, 1900-1985: Recovering and Democratizing Histories of International Health," PhD diss. (University of York, 2021); Yi-T. Li, *Statistics and the Language of Global Health: Institutions and Experts in China, Taiwan, and the World, 1917–1960* (Cambridge: Cambridge University Press, 2022).

which it originated."[20] Yet the political environment shifted rapidly with the signing of the Sino-Soviet alliance and the emergence of Cold War confrontation. By mid-1950, Minister of Health Li Dequan (李德全, 1896-1972) was proclaiming the superiority of Soviet medicine which, by dint of its socialist path, was "advanced not only in politics, economy and social system, but also in its health system and academia". As a result, "learning from the Soviet Union" had become "more relevant to China's needs than learning from other capitalist countries."[21] This new-found orientation towards the Soviet Union had a fundamental impact on the theory and practice of acupuncture. It brought the technique to new locales, while re-focusing research on the workings of the nervous system. Seeking to consolidate the position of traditional medicine against those who sought to eradicate it, practitioners of Chinese medicine seized on the ideas of the colossus of Soviet science, Ivan Pavlov, to pioneer a "new acupuncture" which would draw on clinical research and experimentation, with Pavlovian reflex theory as a basis.

By the time of his death in 1936, Ivan Petrovich Pavlov (1849-1936) had become the doyen of Soviet science. Most famous for his theory of conditional reflexes, Pavlov won the Nobel prize in 1904 for his earlier research on digestive glands.[22] As is well known, Pavlov discovered that dogs could be trained to salivate copiously in anticipation of food. He deemed those primitive and innate reactions "unconditional reflexes." But when researchers consistently sounded a metronome before giving food, dogs would start to salivate at the sound of the metronome, regardless of whether food was present or not, which he termed a "conditional reflex." Following a Russian tradition of "nervism", arguing that the "nervous system governs all other systems, organs and parts,"[23] Pavlov's theory highlighted the central role of the nervous system in physiology, regarding "higher nervous activity," especially in the cerebral cortex, as the dominant feature of all complex behaviours. Pavlov's views were widely perceived as a somatically-oriented reductionism, though historian Daniel Todes argues that Pavlov endeavoured to produce a model that would unify physiology and psychology and enable a better understanding of the human.[24]

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[20] He Cheng, "The Path of Medical Workers [医务工作者的道路]," in Medical Department of the People's Government of the North-East, *On the Path of Medical Workers* [《论医务工作者的道路》], ed. He Cheng (Shenyang: North-East Xinhua Book Store, 1949), 11.

[21] Li Dequan, "Report by Minister Li of the Ministry of Health of the Central People's Government at the First National Health Conference [中央人民政府卫生部李部长在第一届全国卫生会议上的报告]," *North-East Hygiene* 6 (1950): 15.

[22] Daniel P. Todes, *Pavlov's Physiology Factory: Experiment, Interpretation, Laboratory Enterprise* (Baltimore: Johns Hopkins University Press, 2002), 332-347.

[23] Boleslav Lichterman, "A history of Russian and Soviet Neuro(patho)logy," in *Handbook of Clinical Neurology*. Vol. 95, ed. Michael J. Aminoff, François Boller and Dick F. Swaab (Amsterdam: Elsevier, 2009), 737-754.

[24] Daniel P. Todes, *Ivan Pavlov: A Russian Life in Science* (Oxford: Oxford University Press, 2014), 2.

Despite his initial – public – hostility to the Bolshevik regime, Pavlov received generous support from the Soviet authorities – both because of his international fame and the compatibility between his theory and state ideology.[25] "There is nothing intrinsically contradictory between dialectical materialism and the Pavlovian system," argue Gardner Murphy and Joseph Kovach: both put "reflection" at the heart of human behaviour, and "perpetuated confusion" between acquired adaptive functions and the innate causal structures underlying human cognitive ability.[26] Pavlov's death in 1936, six months after a lavish International Congress of Physiologists crowned him the "undisputed Prince of World Physiology," did not end the stranglehold of Pavlovian ideas on Soviet science.[27] Indeed, the emerging Cold War strengthened the political importance of Pavlovianism against "reactionary" capitalist science.[28] The "Pavlovian session" of the Academies of Sciences and Medical Sciences, held in 1950, granted Pavlovianism the highest authority, while criticising other approaches – especially the so-called "capitalist physiology" of Rudolf Virchow – as deviant.[29] This went hand in hand with attempts to export Pavlovian ideas to other state socialist countries and beyond.[30] Indeed, Pavlovian theory also had significant appeal in the West, where behaviourism and learning theory had come to dominate psychology by the 1960s.[31]

China's turn to Pavlov owed much to Pavlovianism's association with Soviet modernity, but also to a perceived political need to discipline the Chinese medical intelligentsia, many of whom had received training from capitalist countries.[32] By June 1952, the Chinese medical establishment also began associating Virchow's cellular pathology with reactionary, capitalist medicine, and arguing that only Pavlov's ideas could modernize Chinese medicine.[33] This became orthodoxy during the "learn from Pavlov" movement.[34] On

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[25] Todes, *Ivan Pavlov*, 441-562.
[26] Gardner Murphy and Joseph Kovach, *Historical Introduction to Modern Psychology*. 6th ed. (London: Routledge, 1972), 378-385.
[27] Todes, *Ivan Pavlov*, 704.
[28] Nikolai Krementsov, *Stalinist Science* (Princeton: Princeton University Press, 1996), 179-183; for the discussion of Pavlov, see 260-274.
[29] For Lysenkoism, see Krementsov, *Stalinist Science*, 158-169; for the Pavlov session, see Ethan Pollock, *Stalin and the Soviet Science Wars* (Princeton: Princeton University Press, 2008), 136-167.
[30] E. M. Tansey, "Pavlov at Home and Abroad: His Role in International Physiology," *Autonomic Neuroscience* 125, no. 1-2 (2006): 1–11, https://doi.org/10.1016/j.autneu.2006.01.013; A general review in terms of Spain, Cuba, China, see Gabriel Ruiz and Natividad Sánchez, "A History of Pavlovian Science," in *Oxford Research Encyclopedia of Psychology,* 27 Aug. 2020, https://oxfordre.com/psychology/view/10.1093/acrefore/9780190236557.001.0001/acrefore-9780190236557-e-598.
[31] Roger Smith, *Between Mind and Nature: A History of Psychology* (London: Reaktion, 2013), 243-4.
[32] Xi Gao, "Learning from the Soviet Union," 73; Yang and Zhang, *Pavlovian Theory*, 4-7.
[33] Yang and Zhang, 5.
[34] Gao, "Learning from the Soviet Union," 73.

17 March 1953, the Military Ministry of Health promulgated a directive announcing the establishment of Pavlov-learning groups in leading military medical institutes, along with a twelve-week syllabus. An editorial in the medical journal *People's Military Surgeon* [《人民军医》] criticized current knowledge as, "spontaneous, fragmentary, piecemeal, and restrained," adding that there existed a lack of scale and systematicity in the introduction of Soviet medicine.[35] By August 1953, Pavlovian instruction had been adopted in other institutions on a national scale, with the Ministry of Health organizing a lavish five-week Pavlov seminar which convened eighty medical scientists from across China.[36]

Pavlovian ideas were not fully accepted in all disciplines. Soviet theories achieved complete domination in psychology, whereas in physiology and the medical sciences there was more diversity.[37] While most biomedical doctors embodied a superficially cooperative attitude towards Pavlovian training classes, with some dismissing the national campaign as "nonsense,"[38] traditional physicians seized on Pavlovianism to lend an "alternative" modern basis to "western" frameworks that were less supportive of traditional understandings. Nowhere was this more apparent than in the field of acupuncture, where practitioners seized on new ideas from the Soviet Union to put forward a new, Pavlovian, acupuncture.

The "Pavlovianization" of Acupuncture

The Chinese healthcare establishment's endorsement of Pavlovian ideas created new possibilities for the modernization of TCM. Even before an editorial in *People's Daily* in June 1952 fired the starting gun on Pavlovian research, experts were exploring the implications of his ideas. Ma Jixing (马继兴, 1925-2019), an acupuncture teacher at the Beijing Further Education School for Traditional Chinese Doctors, translated articles and a conference

[35] Editorial, "Resolute Implementation of the Direction of the Study of Soviet Medicine, Campaign the Movement to Study Pavlov's Doctrine [坚决贯彻学习苏联医学的方向 认真开展学习巴甫洛夫学说运动]," *People's Military Surgeon* 3 (1953): 79.

[36] Editorial, "Central Ministry of Health Holds Seminar on Pavlovian Doctrine [中央卫生部举办巴甫洛夫学说学习会]," *Chinese Science Bulletin* 10 (1953): 96-97.

[37] Zhipeng Gao, "Pavlovianism in China: Politics and Differentiation across Scientific Disciplines in the Maoist Era," *History of Science* 53, no.1 (2015): 57-85, https://doi.org/10.1177/0073275314567436
Also see Zhipeng Gao, "Forging Marxist Psychology in China's Cold War Geopolitics, 1949-1965," *History of Psychology* 22, no.4 (2019): 309-327, https://doi.org/10.1037/hop0000097.

[38] Shaohua Liu, *Leprosy Doctors and the Changing China: Disease Metaphors and the History of Epidemiological Prevention in Post-imperial Experiments* [《麻風醫生與巨變中國: 後帝國實驗下的疾病隱喻與防疫歷史》] (Taipei: Springhill Publishing, 2018),109.

paper that formalised the introduction of Pavlov's ideas to China.[39] In an earlier textbook for the School Ma offered an idiosyncratic and simplified version of Pavlovian thought, which hardly addressed higher nervous activity or conditional and unconditional reflexes.[40] His 1953 article adopted Pavlov's ideas more rigorously.[41] In the later publication, Ma continued to refer to his earlier concept of "direct" and "indirect" physiological reactions to acupuncture, but downgraded them to secondary physiological responses controlled by higher nervous activity, particularly the cerebral cortex. The connections (reflexes) between skin and internal organs (cutaneo-visceral reflexes) that Ma cited in his paper had been previously explored by Russian physicist Grigorii Zakharin (1829-1898), who found that hyperesthesia of skin had certain connections to diseases of viscera that could be used for diagnosis, and was developed into a scheme of segmental projection between the external and the internal by the English neurologist Henry Head (1861-1940). Working in a similar vein, James Mackenzie (1853-1925) further proposed that muscle and connective tissues could become allergic in response to internal diseases.[42]

While these ideas would play an important role in Soviet attempts to 'Pavlovianise' acupuncture too, Ma regarded Zakharin, Head, and Mackenzie's views as "extremely insufficient" and "not holistic".[43] Instead, he proposed an alternative model, suggesting that various internal tissues were lined with large receptors capable of receiving needling stimulation, which was understood to be processed by the brain and central nervous system.[44] Guided by Pavlov's theory of "protective inhibition," which stated that temporary inhibition could improve afflicted organs and cure diseases, Ma argued that needling "tender points" on skin would create excessive stimuli that would turn the central nervous system towards a state of inhibition.[45] "Tender points", known as *ashi* points (阿是穴) on account of the cries of pain emitted by patients, had been frequently used by ancient

[39] Ma Jixing, "Resolution of the Scientific Conference of the USSR Academy of Sciences and the USSR Academy of Medical Sciences on the Physiological Doctrine of Academician Pavlov [苏联科学院与苏联医学科学院关于院士巴甫洛夫生理学说问题科学会议的决议]", *Health News*, August 23, 1951.

[40] Ma Jixing, *A Brief Introduction to Acupuncture* [《简要针灸》] (Beijing: Jiankang Book Store, 1952).

[41] Ma Jixing, "Discuss Some Fundamental Problems of Acupuncture therapy Based on Pavlov's Doctrine [在巴普洛夫学说基础上论针灸疗法中的若干基本问题]," *Beijing TCM* 2, no. 8 (1953): 3-16.

[42] Ma Jixing, "Discuss," 7. For original works, see e.g. James MacKenzie, "Remarks on the Meaning and Mechanism of Visceral Pain as Shown by the Study of Visceral and Other Sympathetic (Autonomic) Reflexes," *British Medical Journal* 1 (1906): 1523–1528.

[43] Ma, "Discuss," 7.

[44] Ma, 8-9.

[45] Pavlov developed sleeping therapy in his later studies of psychiatric problems, in which the concept of 'protective inhibition' was significant. See Ivan Pavlov, "The Conditioned Reflex," in *Selected Works* (Moscow: Foreign Languages Publishing House, 1955), 266-268.

Chinese acupuncturists.[46] In the early PRC period, they allowed doctors in the new era to argue for the modern, scientific nature of acupuncture by providing an example of Pavlovian nervism in action.[47]

The ideas of Henry Head, as well as the Pavlovian explanation of tender points, only provided a plausible similarity to acupunctural practices, however. As most of the Head pressure-pain areas were located in close proximity to related organs, acupuncture's advocates had long wondered why needling non-allergic areas – especially those remote points at extremities – was effective. Ma replaced the Japanese idea of "induction," in which "morbid fluids" - as imagined - were induced from the lesion to the piercing site, with a neurophysiological one, drawing on the ideas of Aleksei Ukhtomskii (1875-1942), a St. Petersburg/Leningrad-based physiologist. Ukhtomskii's "theory of dominance," which argued that excitation in the cerebral hemisphere could overwhelm other focuses of stimulus, diverged from Pavlov's ideas of human instinct and has been seen as playing a similar role to libido in Freudian psychoanalysis.[48] Chinese researchers were never bound to uphold the purity of Pavlovian ideals, and the fact that Ma's "Pavlovian" acupuncture was eagerly received by the medical community illustrates how Chinese researchers produced syntheses of Soviet ideas, taking research in new directions and fulfilling their own agendas.

The relationship between old and new was contested, however – a fact which was particularly evident when the doyenne of Chinese acupuncture, Zhu Lian, revised her work in-light-of Pavlov's ideas. In the second edition of *The New Acupuncture* (《新针灸学》) in 1954, Zhu formally renounced the approach she had taken in the first edition, which, according to its new introduction, had relied too heavily on the work of Japanese scholars, whose ignorance of the cerebral cortex led to a "Virchowan" perspective.[49] The book replaced Japanese stimulation methods of "excitation", "inhibition" and "induction" with neuropathological concepts of "strong stimulus," involving lasting, repetitive pricking to produce neural hyperactivity, and "mild stimulus," which involved short needling to provoke paralysis.[50] Though the concept of "induction" was abandoned, Zhu still attempted to

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[46] Longxiang Huang, *The Historical Development of Acupuncture* [《中国针灸学术史大纲》], (Beijing: Huaxia Publishing House, 2001), 639-640; Mingzhu Ye and Hechang Feng, "On the Nomination of Ashi Point [阿是穴命名辨]," in *Fifty Years of Studying Acupoints and Meridians* [《循经考穴五十年》], ed. Ding Li (Shanghai: Pujiang Education Press, 2013), 378-380.

[47] Huang, "*The Historical Development of Acupuncture,"* 15.

[48] See Elena Y. Zueva and Konstantin B. Zuev, "The Concept of Dominance by A. A. Ukhtomsky and Anticipation," in *Anticipation: Learning from the Past - The Russian/ Soviet Contributions to the Science of Anticipation*, ed. Mihai Nadin (Springer International Publishing, 2015), 13-36; Murphy and Kovach, *Historical Introduction*, 387.

[49] Zhu Lian, *The New Acupuncture*, 2nd ed. (Beijing: People's Medical Publishing House, 1954), preface, 21.

[50] Zhu, 16-18.

square an idea of "remote stimulation" with the Pavlovian idea of "higher nervous activity" and warned against overstating the role of tender points: "by no means does any single point work for any disease," she argued.[51] However, Zhu's reworking of acupunctural practice was based more on her own clinical experience and experiments carried out at her Beijing Institute more than Pavlovian theory: it was more important, she believed, to prioritise practice over "empty theories (空理)."[52] Zhu Lian's standpoint towards the "Pavlovianization" of acupuncture was thus conservative. Historian Ka-wai Fan has noted that Zhu "rarely used" Pavlovian ideas "to explain the actual curative effects of acupuncture."[53] As one of the most prominent figures in the government advocating for acupuncture at the time, her cursory references to Pavlov were driven more by political considerations than scientific inquiry, with Pavlovian ideas serving as a means of demonstrating loyalty to party policies while promoting the method internationally.

Zhu's 1954 textbook was an attempt to square new ideas with state-mandated theories. In a similar vein, Pavlovian ideas also provided epistemological and discursive resources that helped anchor the scientific, modern identity of traditional medicine. Historians have shown how features considered fundamental to TCM, including its orientation towards "pattern recognition and treatment determination (辩证论治)"– one of the core diagnostic principles of modern TCM – and its holistic focus were both forged through an engagement with Pavlovian ideas.[54] Yang and Zhang argue that TCM practitioners' statements in favour of Pavlov served both to "scientize" acupuncture and, given Mao's support for linking the two, demonstrate political loyalty.[55] Chinese scientists understood Pavlov's ideas as dialectical, linking human and environment, subjective and objective, psychological and physiological. The Pavlovian emphasis on "the wholeness of the organism" chimed and supported the systematization of TCM as a distinct paradigm of holistic medicine, contrasting with the allopathic approach in the West.

In a 1953 lecture, the eminent traditional Chinese doctor Ren Yingqiu (任应秋, 1914-1984) criticized the "old chemotherapy" that focused solely on pathogens, and foregrounded the necessity of considering the whole body's reactions. Ren reframed the classical theory of "six-meridian pattern differentiation (六经辨证) - a foundational

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[51] Zhu, 19.

[52] Cheng Dan'an, *Cheng Dan'an's Medical Works* [《承淡安医集》], ed. Zhang Jianbing and Xia Youbing, (Beijing: China Press of TCM, 2017), 1947.

[53] Ka-wai Fan, "Discussion on Scientification of Acupuncture in Hong Kong in 1950s - With Special Reference to Zhu Lian's *The New Acupuncture*," *Asian Culture and History* 3, no. 2 (2011): 4, https://doi.org/10.5539/ach.v3n2p2.

[54] Volker Scheid, *Chinese Medicine in Contemporary China*, 200-237; Lei, *Neither Donkey nor Horse,* 185-190; Judith Farquhar, *Knowing Practice: The Clinical Encounter of Chinese Medicine (*Westview Press, 1996), 148-160. On TCM's holistic focus see Yang & Zhang, "Pavlovian Theory," 15-19.

[55] Yang and Zhang, "Pavlovian Theory," 17-18.

diagnostic principle in traditional herbal prescription - as a dynamic struggle between the body's functional regulation and invading pathogens. He reinterpreted the *Taiyang* pattern, for instance, as a state in which "the body's regulatory functions are disrupted, creating an opportunity for various pathogens to cause disturbances."[56] Pavlovianism, claimed Ren, helped illustrate the "holistic principle" of Chinese therapeutics from "perceptual experience to rational cognition."[57] Yet Ren's "pathogens" were no more than a modern expression of the "evil *qi* (邪气)" used in ancient texts. Rather than focusing on identifying specific pathogens responsible for diseases, Ren was more concerned with how to validate the efficacy of traditional medical knowledge.

Ma and Ren's case indicates that both China and the Soviet Union – as shown below – used the brief window of Sino-Soviet exchange to advance their own agendas. From the mid-1950s, as China's Pavlov movement waned and the CCP made an abrupt shift to endorse "national heritage," Chinese doctors grew more confident in advocating for its legitimacy without rushing to seek validation through modern medical theories. Yet the Pavlov movement of the 1950s left a lasting mark on acupuncture research by shaping its terminology, theoretical frameworks, and experimental methodologies. The 1957 publication of *Acupuncture* (*针灸学*), which later became the foundation for officially sanctioned acupuncture textbooks, framed acupuncture as a "holistic" rather than an "antagonistic" therapy.[58] As late as 1964, despite the rupture in Sino-Soviet relations, Chinese physiologists continued to explore the relationship between acupoint stimulation and cortical electrical responses, seeking to scientifically validate its mechanisms.[59]

Acupuncture Becomes Soviet

The Soviet adoption of acupuncture may have been the product of its post-war alliance with China, but its enthusiasts saw themselves as the inheritors of a longer tradition of Russian engagement. Prokhor Charukovskii (1790-1842), a therapist and editor of the *Military Medical Journal*, published a detailed article on acupuncture in 1828, though subsequent

[56] Ren Yingqiu, "Reappraisal of Traditional Chinese Medical Therapeutics [中医治疗学的新评价]," New Chinese Medicine 4, no. 5 (1953): 8.
[57] Ren, "Reappraisal," 7.
[58] Nanjing College of TCM, *Acupuncture* [《针灸学》], (Nanjing: Jiangsu People's Publishing House, 1957), 1.
[59] Jingning Xiao, et al., "Study on Cortical Evoked Potentials Induced by Stimulation at the 'Zusanli' Acupoint in Rabbits [兔"足三里"部位刺激的大脑皮层诱发电位的研究]," *Journal of Beijing Medical College*, no. 1 (1964): 6-11.

discussions of acupuncture remained cursory and sceptical.[60] Though medical co-operation between the USSR and China continued through the 1930s, only after World War II did Soviet engagement with acupuncture gain pace.[61] After the war, Emmanuil Viaz'menskii (1913-1954), a medically-trained philologist drafted as a military doctor in the Far East, was sent on assignment to study Chinese medicine and defended a dissertation on traditional medicine in China.[62] However, he soon became a victim of the anti-semitic Doctor's Plot; he was banished from his job at the Kirov Military Medical Institute in Leningrad in 1953 and died a year later.[63]

The example of Viaz'menskii shows that Sino-Soviet exchanges were bi-directional. As early as March 1952, the Director of the Soviet Institute of Neurology at the Academy of Medical Sciences, N. V. Konovalov (1900-1966), wrote to Zhu Lian expressing curiosity about acupuncture's links to the nervous system and encouraged her to translate *The New Acupuncture* into Russian.[64] Zhu's reply, which agreed that acupuncture's mechanisms could only be understood with reference to Pavlovian theories, was carefully crafted to pique Soviet interest. She emphasized that clinical results improved after acupunctural methods were adjusted to fit with Pavlovian ideas, and argued that this demonstrated not only that Pavlovianism underpinned the mechanisms of acupuncture but also that it served as the foundation of physiology and pathology – a claim she repeated in the 1954 version of her book.[65]

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[60] P. Charukovskii, "Igloukalyvanie (akupunktura)," *Voenno-meditsinskii zhurnal* 1 (1828): 251-268; A.A. Tatarinov, 'Kitaiskaia meditsina', *Trudy chlenov rossiiskoi dukhovnoi missii v Pekine*. Tom 2 (St. Petersburg, 1853), 359-363; P.A. Kornievskii, *Materialy dlia istorii kitaiskoi meditsiny* (Tbilisi, 1878), 71-79; P. Ia. Piasetskii, *Kak zhivut i lechatsia kitaitsy* (Moscow, 1882), 78-79; V.V. Korsakov, "Meditsina v Kitae v proshlom i nastoiashchem", *Vrachebnoe delo*, 20 (1928): 1561-1565.

[61] O.S. Nagornykh and N.P. Shok, "Komandirovki sovetskikh vrachei v KNR v 1950-1960-e gg.: Realizatsiia planov sotrudnichestva v sfere meditsiny i zdravookhraneniia," *Vestnik Tomskogo gosudarstvennogo universiteta*: *Istoriia* 65 (2020): 75-85 [78], https://doi.org/10.17223/19988613/65/10

[62] Biographical details from A.I. Kobzev and V.E. Eremeev, "Izuchenie v Rossii kitaiskikh nauk, iazykov i obrazovaniia" in *Dukhovnaia kul'tura Kitaia: entsiklopediia*. Tom 5 [Nauka, tekhnicheskaia i voennaia mysl', zdravookhranenie i obrazovanie], ed. M.L. Titarenko et al (Moscow: Vostochnaia literatura, 2009), 655-662.

[63] Kobyev and Eremeev, "Izuchenie v Rossii," 655-662. Viaz'menskii's work made a valuable contribution to subsequent research and one prominent figure, Vadim Vogralik, recognised him as posthumous co-author of their 1961 book, *Sketches on Chinese Medicine*. See V.G. Vogralik and E.S. Viaz'menskii, *Ocherki kitaiskoi meditsiny* (Moscow: Medgiz, 1961).

[64] Zhu, "*The New Acupuncture*," 20.

[65] Zhu Lian, "Reply to the Vice-President of the USSR Academy of Medical Sciences [给苏联医学科学院副院长的复信]," June 1952, in Zhang Lijian, *Zhu Lian and Acupuncture* [《朱琏与针灸》] (Beijing: People's Medical Publishing House, 2015), 92.

A 1954 treaty on technical exchanges led to the creation of a Soviet-Chinese technical commission.[66] Prominent Soviet healthcare experts visited China and offered advice on the organization of a national healthcare system and preventative medicine.[67] Seizing this opportunity, the Chinese government actively highlighted its medical advancements—most notably through the Acupuncture Research Institute in Beijing, led by Zhu Lian, which became a key platform for showcasing China's achievements in traditional medicine. By the end of the 1950s it had taught nearly a hundred Soviet doctors and received medical missions from several other countries.[68] In early 1955, in the wake of PRC Minister of Health Li Dequan's visit to the Soviet Union,[69] the Soviet Minister of Health, Maria Kovrigina (1910-1955) visited Zhu's Institute and gave a speech emphasising the value of TCM to the Soviet Union, and added that a team of Soviet experts would soon be dispatched to the country to study its methods.[70]

It would be another year before the team, led by Leningrad-based neurologist Esfil'd Tykochinskaia, was dispatched. But there were already prominent Soviet doctors studying the method: between 1954 and 1956, a team led by Vadim Vogralik, a surgeon based in the Soviet Russian city of Gorky, was tasked with re-organising the Chinese healthcare system, reforming medical education, and providing expert medical treatment to the Chinese elite.[71] The team visited medical and research facilities, ancient landmarks as well as factories and hydro-electric power stations in Shanghai, Nanjing, Wuhan, and Tianjin, with Vogralik expressing particular admiration for the beauty of Guangzhou.[72] Between 1959 and 1961, Vogralik published five books about acupuncture and Chinese medicine, as well as a travelogue and numerous articles. He described China as a "great and remarkable country," the Soviet Union's "closest neighbour and best friend" and likewise described Chinese

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[66] "Soglashenie mezhdu pravitel'stvom Soiuza Sovetskikh Sotsialisticheskikh Respublik i pravitel'stvom Kitaiskoi Narodnoi Respubliki o nauchno-tekhnicheskom sotrudnichestve," 12 Oct. 1954 in *Sovetsko-kitaiskoe otnosheniia, 1952-1955* (Moscow: Knigograd, 2015), 222-223.

[67] On these discussions see F.G. Krotkov, "O poezdke sovetskikh uchenykh-medikov v narodnyi Kitai," *Vestnik Akademii Meditsinskikh Nauk SSSR* 3 (1956): 58-62; O. Kovtun et al, *Mariia Kovrigina: Rozhdennaia zhit' i pobezhdat*'. Ocherk (Ekaterinburg: Ural'skii gosudarstvennyi meditsinskii universitet, 2022), 77-80. On the limited nature of early exchanges see Zhihua Shen, *Soviet Experts in China, 1948-1960 [苏联专家在中国, 1948-1960] (*Beijing: China International Broadcasting Press, 2003), 44.

[68] Jing Xianghong, Duan Lin et al., *History of the Institute of Acupuncture and Moxibustion of the Chinese Academy of Chinese Medical Science* [《中国中医科学院针灸研究所所史》] (Beijing: People's Medical Publishing House, 2021), 81-82.

[69] Li Dequan, "Learn from the Soviet Union, Construct Our Health Enterprise [学习苏联, 建设我国卫生事业]," *People's Daily*, November 7, 1955.

[70] Kovtun et al, *Mariia Kovrigina*, 77-80.

[71] V. Vogralik, "Plodotvornoe sotrudnichestvo," *Meditsinskii rabotnik,* 29 Sep. 1959, 4; Nagornykh and Shok, "Komandirovki sovetskikh vrachei," 75-85 [78, 79].

[72] Vogralik, "Plodotvornoe sotrudnichestvo," 4.

colleagues as "friends."[73] While press reports typically described medical aid to the decolonizing world as a "gift" from the Soviet Union, with such rhetoric presupposing an unequal exchange from modern to less advanced, articles on Chinese medicine typically exuded respect for the country's present-day achievements alongside affect-laden sentiments about the friendship between the two countries.[74] These positive sentiments extended into diplomatic relations: Li Dequan and Kovrigina reportedly enjoyed a close and friendly relationship, with Kovrigina describing Li as a "sister".[75]

In a 1956 speech to the medical council at the Gorky Medical Institute (GMI), Vogralik argued that traditional medicine in China represented "the richest spring of medical knowledge, albeit a spring that requires scientifically formulated, in-depth and systematic work."[76] But a "scientific" acupuncture did not necessarily mean abandoning the technique's classical foundations. In the same year, Vogralik gave another speech to Chinese specialists which argued that, as long as they were interpreted through a modern framework, concepts such as *yin-yang* and five phases conformed to the principles of dialectical materialism.[77] In fact, Vogralik argued that Zhu Lian's work, so crucial in Sino-Soviet knowledge exchange, had adopted an excessively radical attitude which abandoned valuable ideas from the past, such as the system of fourteen meridians.[78] His 1961 book even included an introduction to "Midday-Midnight Ebb-Flow (子午流注)," an ancient system of numerological correspondences between the macrocosm and microcosm that many Chinese physicians regarded as superstitious, which Vogralik compared with modern studies of body circulation.[79] This perspective was likely influenced by China's renewed emphasis on traditional medical theories from the late 1950s onward, yet Vogralik's recognition of Chinese traditional experience remains an undeniable facet of his engagement.

Vogralik's positive evaluation prompted discussions within the Technical Commission about the possibility of Soviet doctors studying acupuncture.[80] In April 1956, a

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[73] V. Vogralik, *Slovo o kitaiskoi meditsine* (Gor'kii: Gor'kovskoe knizhnoe izdatel'stvo, 1959), 3-4, 6.

[74] The language of gift-giving was not completely abandoned, however. See E. Pishchin, "Podarok," *Meditsinskii rabotnik*, September 29, 1959, 4. On the "economy of the gift" see Jeffrey Brooks, *Thank You, Comrade Stalin! Soviet Public Culture from Revolution to Cold War* (Princeton, NJ: Princeton University Press, 2001).

[75] Kovtun et al., *Mariia Kovrigina*, 80.

[76] Olga Nagornykh, "To the Biography of Professor V.G. Vogralik: Method of Acupuncture and Aspects of Soviet-Chinese Relations in the 1950s," *History of Medicine* 4, no. 4 (2017): 374-382 [379-380], https://doi.org/10.17720/2409-5834.v4.4.2017.07g

[77] Vogralik, "Insights into the Study and Scientific Demonstration of Chinese Medicine [对中医学研究和科学论证方面的见解]," *Health News*, August 3, 1956.

[78] V. Vogralik, *Osnovy kitaiskogo lechbnogo metoda chzhen'-tsziu* (Gor'kii: Gor'kovskoe knizhnoe izdatel'stvo, 1961), 70.

[79] Vogralik, 48.

[80] E. Boeva et al., "Po metodu kitaiskikh vrachei," *Meditsinskii rabotnik,* June 15, 1959.

three-woman team, comprising Tykochinskaia, physician Musa Usova, and medical assistant Nina Osipova, travelled to China with the specific goal of learning more about acupuncture from Zhu Lian's Institute.[81] The Soviet Ministry of Health tasked the team with studying the theory and practice of acupuncture, "master[ing] its methods and technology," observing its use in clinical practice, and bringing Soviet work on reflex therapy (*reflektornaia terapiia*) to the attention of Chinese scholars.[82] The Chinese government paid equally close attention to the Soviet team. Prior to their arrival, at least four meetings were convened by Zhu Lian and the preparatory team to arrange the details of everyday learning tasks, lectures by prominent TCM practitioners, clinical internships, visits and discussions.[83]

The three-month visit was considered a success by both sides. A report published in the Chinese publication *Health News* shortly after the visit stated that Soviet doctors had treated 68 patients, of whom 50 reported positive effects from their treatment. [84] Upon Tykochinskaia's return to the Soviet Union in June 1956, a gift from Zhu Lian arrived in Leningrad: a partial translation of *The New Acupuncture*, which Chinese experts had used as a textbook for the visitors.[85] The gift was valuable, because Soviet practitioners' attempts to popularise the practice had been hamstrung by a lack of Russian-language materials.[86] Soviet scholars were used to citing research from French, German, English and Italian scholars, but the difficulty of learning Chinese meant that even acupuncture's most enthusiastic advocates, such as Vogralik and Tykochinskaia, were forced to rely on translators and translations. Between 1958 and 1960, a wide range of materials on TCM by Chinese authors was published in both medical and popular journals.[87] A 1957 lecture

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[81] M.A. Onëtov, "Chzhen'-tziu terapiia v SSSR (1950-e - 1970-e gg.): tri faktora integratsii v gosudarstvennuiu meditsinu," *Gumanitarnye issledovaniia v vostochnoi Sibiri i na dal'nem Vostoke* 4 (2022): 16-25 [19-20], https://doi.org/10.24866/1997-2857/2022-4/16-25.

[82] "Otchet o komandirovke sovetskikh uchenykh v KNR dlia izucheniia metoda 'Chzhen'-tziu-terapii'," July 1956, quoted in Onëtov, 20.

[83] Zhang Shujian and Zhang Lijian, "Beginning of Foreign Exchange of Acupuncture-Moxibustion in New China: the Whole Story of the Experts from the Former Soviet Union Studying Acupuncture-Moxibustion in China in 1956 [新中国针灸对外交流的开端—1956 年前苏联专家来华学习针灸始末]," *Chinese Acupuncture and Moxibustion*, 41, no. 11 (2021): 1204, https://doi.org/10.13703/j.0255-2930.20210730-0006.

[84] "Ministry of Health Sends Off Soviet Experts Who Studied Acupuncture Therapy [卫生部欢送考察针灸疗法的苏联专家]," *Health News*, July 20, 1956; Soviet accounts of the visit: E. Tykochinskaia, "Chzhen'-tsziu terapiia," *Meditsinskii rabotnik*, January 15, 1957, 4; A. Amshinskii, "Chzhen'-tsziu terapiia," *Trud*, December 18, 1956, 4.

[85] Zhang, "Beginning," 1205.

[86] Qin Bowei, "Observed Chinese Medicine in Moscow [在莫斯科见到的中国医药]," *Health News*, 13 Dec. 1957.

[87] Siu In-ian' [Xu Yinyan], "Primenenie metodov akupunktury pri bolezniakh LOR", *Vestnik otolaringologii* 6 (1958): 3; Liu Ian' [Liu Yong], Khua Guan [Hua Guang], "Nekotorye dostizheniia patologicheskoi fiziologii za poslednie gody v Kitae," *Patofiziologiia i eksperimental'naia terapiia,* 5 (1959): 3. This was a translation

delivered in Moscow by the Deputy Minister of Health, Qian Xinzhong (钱信忠, 1911-2009), one of the first Chinese medical students to study in the Soviet Union, was swiftly translated into Russian and proved sufficiently popular to be reprinted in 1959.[88] Qian was keen to divest acupuncture of its "superstitious relics" and to draw on the "most advanced" Soviet theories, which classified acupuncture as a "reflex therapy." He drew on the findings of authors like Ma, who had closely adhered to Pavlovian trends, while also praising Zhu Lian's painstaking systemization of acupoints according to modern physiology.

Such views were surely music to the ears of his Soviet audience. Vogralik praised Qian and other Chinese practitioners for abandoning the burdens of the past and adopting socialist perspectives.[89] Zhu's appeal to Pavlovian ideas attracted particular attention from Soviet researchers, but Soviet reaction to the translation of the second edition of *The New Acupuncture* was not all positive. In 1959, Ivan Kochergin, the Deputy Minister of Health (and also a scientist) argued that the book's importance lay in its "systematization" rather than its "scientific value." Readers were exhorted to learn the technical details, which they might at first glance regard as "unnecessary content," rather than Zhu's applications of Pavlovian theory.[90] Soviet scholars' critical approach to Zhu's text may have stemmed from her declining influence in China. From the mid-1950s, following Mao's direct intervention, the previously rigid policy of scientific standardization of traditional medicine came under attack.[91] In 1958, Zhu, who had strongly advocated discarding old theories entirely, was labelled a "nihilist" for disregarding "national heritage." By 1960, she had been officially demoted and removed from Beijing. In September 1959, a Chinese delegation sent to the Soviet Union for acupuncture exchanges consisted of practitioners more aligned with traditional theories, who clarified the latest developments in China's approach to acupuncture, all of which may have reinforced Soviet caution towards Zhu's work.[92] However, just as Chinese acupuncturists appropriated Pavlovianism to fit domestic priorities, Soviet scientists followed their own agenda, which downplayed political shifts in the neighbouring country. Vogralik, for instance, remained an advocate for ancient Chinese knowledge and, in his 1961 book, highlighted the Chinese politico-medical shift for Soviet readers.[93]

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of "The Development and Achievements of Pathophysiology in China" [我国病理生理学的发展与成就], *Chinese Journal of Pathophysiology*, no. 3 (1959): 136-138.

[88] Qian Xinzhong, *Kitaiskaia narodnaia meditsina* (Moscow: Znanie, 1959).

[89] Vogralik, 'Preface' in Qian, *Kitaiskaia narodnaia meditsina*, 9.

[90] See Kochergin's preface to Zhu Lian, *Rukovodstvo po sovremennoi chzhen' tziu-terapii* (Moscow: Medgiz, 1959), 4.

[91] Kim Taylor, *Chinese Medicine*, 70-79.

[92] "The Acupuncture Delegation to the Soviet Union Successfully Completed Its Mission and Returned" [赴苏针灸代表团胜利完成任务回国], *Health News*, 2 December, 1959.

[93] Vogralik, *Osnovy*, 70.

By the time Zhu's translation went to press, Soviet research had already found its way into print. Vogralik's edited volume on the latest Soviet findings, which was published in May 1959, was followed in June by Vogralik's overview of Chinese medicine. In July, in response to doctors' requests for a written version of lectures he had given at the Lenin State Institute for the Further Training of Doctors in Kazan', Ivan Rusetskii published the first Russian-language guide to acupuncture.[94] Rusetskii (1891-1964) was a revered neurologist who had published widely on reflexes and the autonomic nervous system. Following a trip to China from 1955-57, Rusetskii became fascinated by acupuncture and became the first scientist to institutionalise "reflex therapy" [*refleksoterapiia*] in the Soviet Union, going on to become one of the country's most respected acupuncture researchers. Zhu's translation, which followed a month later, was therefore not appearing in a vacuum: Soviet research into acupuncture was continuing along its own path – one in which drew on Chinese observations, but which, despite Zhu's translation of classical ideas into "Pavlovian," remained sceptical whether Chinese research could play anything more than a supporting role in understanding acupuncture's working mechanisms.

"It helps, but why?"

By the late 1950s, Soviet acupuncture research had blossomed into a distinct school.[95] A 1959 resolution, passed by the All-Union Ministry of Health, formalised the system for training and practicing acupuncture, with the technique now taught in Moscow, Leningrad, Gorky and Kazan'. Further, republic-level, resolutions expanded the technique across the country.[96] With the establishment of new research centres, as well as the publication of articles and monographs, Soviet research into acupuncture had gone from a trickle to a small stream. An applied strand of research focused on acupuncture's efficacy in the treatment of a wide range of conditions. There were trials into the use of acupuncture for the treatment of trigeminal neuralgia, depression, asthma, and headaches, while the Ministry of Health encouraged scientists to focus on research into acupuncture's role treating epilepsy, polio, multiple sclerosis, sleep disorders, and sexual "neuroses".[97]

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[94] I. Rusetskii, *Kitaiskii metod lechebnogo igloukalyvaniia* (Kazan': Tatarskoe knizhnoe izdatel'stvo, 1959).
[95] Soviet authors used a range of terms that are in this article translated as "acupuncture." In the 1950s, many authors Cyrillized the Chinese term "Zhen-Jiu" as *Chzhen' tziu*. The terms *igloukalyvanie* [needle-pricking] and *prizhiganie* [cauterization/moxibustion] were also commonly used. After the Sino-Soviet split, when the Chinese origins of the practice became problematic, the terms "needle therapy" [*igloterapiia*], "reflex therapy" [*refleksoterapiia*], or some hybrid of the two ("needle reflex therapy" [*ignorefleksoterapii*]) were more commonly employed.
[96] "O primenenii metoda igloterapii v statsionarnykh i ambulatornykh lechebno-profilakticheskikh uchrezhdeniiakh," *Order of the Soviet Ministry of Health*, March 10, 1959.
[97] Vogralik, ed., *Chzhen-tziu terapiia*; "O primenenii metoda igloterapii," Appendix 3.

However, the scientists who had visited China were generally more invested in a theoretical strand of research that sought to understand the scientific mechanisms undergirding the treatment's apparent effectiveness. To quote Tykochinskaia: "it helps, but why?"[98] Attempts to answer this question were sometimes framed within the dominant Pavlovian paradigm – in particular "nervism," or neurogenic theory, which held that physiological processes can be traced to the activities of the nervous system. It would nevertheless be misleading to say that Soviet scholars set out to "prove" Pavlovian ideas. Pavlov was certainly recognised as an authority whose previous research could help scholars better understand the relationship of skin surface to internal organs, yet he was hardly the most frequently cited scientist. We might conjecture that Pavlov played the role that Marx and Lenin played in Soviet social science scholarship: he was an obligatory reference that acted as a marker of political affiliation, but rarely a working component in the analysis that followed.[99] Soviet acupuncture researchers instead placed their research within a broader international conversation that included research by European researchers like French neurologist Jules Dejerine and British physiologist John Newport Langley, and more recent translated research from Japan and Vietnam.[100]

Despite China's pivotal role in training Soviet scholars, the latter rarely cited the work of Chinese scientists. The first Chinese translations only appeared in 1958 with Qian Xinzhong's work on Chinese medicine; by the time Zhu Lian's *New Acupuncture* appeared in 1959, the Sino-Soviet friendship was beginning to sour. There was thus only a brief interval, between 1958 and 1961, where such borrowings were possible.[101] One scholar who did cite Chinese research, albeit in translation, was the neurologist Ivan Rusetskii. In a 1959 article published in the journal *Clinical Medicine*, Rusetskii summarised the international literature on the links between skin and internal organs, and suggested treatments.[102] In doing so, he came to occupy similar territory to Chinese researchers. Rusetskii cited Zhu Lian's *The New Acupuncture* (most likely from the translation presented to Tykochinskaia in 1956), but his work also bore similarities to that of a scholar he did not reference—Ma Jixing. This omission was likely due to Ma's lack of authoritative status in China's medical establishment at the time, as well as the fact that his work had not been translated into Russian. As discussed

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[98] E. Tykochinskaia, *Igloukalyvanie i prizhiganie* (Moscow: Znanie, 1961), 41.

[99] On this point see David Joravsky, *Russian Psychology: A Critical History* (Oxford: Basil Blackwell, 1989), 448-449.

[100] See I. Kochergin, "Opyt izucheniia chzhen'-tsziuterapii v SSSR (vmesto predisloviia)," in Zhu Lian, *Rukovodstvo po sovremennoi chzhen' tziu-terapii* (Moscow: Medgiz, 1959), 3-20; Vogralik, *Osnovy*, 25-34; Tykochinskaia, *Igloukalyvanie*, 3-14; Rusetskii, *Kitaiskii metod*, 3-13, 22-30.

[101] Feng Lida and Dmitri Parmenikov, a Leningrad-based scientist, collaborated on a guide to acupuncture, completed in early 1960: Feng Li-da [Feng Lida] and D. Parmenikov, *Igloterapiia i prizhiganiia* (Leningrad: Medgiz, 1960).

[102] I. Rusetskii, "Pokrovy tela i vnutrennie organy," *Klinicheskaia meditsina* 10 (1959): 25-31.

above, Ma had also sought to explain the "cutaneo-visceral reflexes" that governed the relationship between the skin surface and the internal organs, and he had also, like Rusetskii, drawn on the research of Sir Henry Head and Grigorii Zakharin about the connections between skin surface and internal organs. These "Zakharin-Head zones," as they became known in both Soviet and Chinese scholarship, seemed to "correspond exactly with Chinese meridians" [*jīngxué,* tszin-siue] and Rusetskii argued that these could be used to build up a "pain picture" of the body, which could be used both as a diagnostic tool and as a platform for treatment.[103]

Rusetskii's use of the ideas of a bourgeois English doctor was testament to Soviet scientists' new-found ability to engage with international research currents. The change in attitudes to western research is also illustrated by the research of Anatoly Podshibiakin, a Ph.D. candidate at the A.A. Bogomolets Physiology Institute in Kyiv. His explorations into what he called "Biologically Active Points (BAP)" was published at the end of the 1940s and early 1950s – some of the most trying times for Soviet physiologists. The Pavlovian Sessions, which took place in June 1950, marked the end of a battle within the Soviet scientific community between orthodox Pavlovians and those who sought to use his teachings more loosely. Ultimately, the former were victorious, leading to the removal of many leading scientific figures from their posts. [104] Writing in the midst of these science "wars," Podshibiakin inevitably began a 1952 article with a reference to Pavlov, who had argued that changes in the condition of the internal organs were reflected in the skin via trophic nerve connections.[105] At the same time, Podshibiakin attacked French and German scholars for contradicting Pavlov; their views on the relationship between internal organs were "completely at odds with our contemporary understanding" and "unusable for our purposes."[106]

Podshibiakin's work became central to the development of acupuncture research in the Soviet Union. His studies into biomagnetism, which drew on research on animals and humans, identified particular areas of the body, around the size of a 10 kopeck coin (roughly equivalent to a present-day English 5p coin or a US dime), that displayed increased electrical charge and temperature changes which were the effect of internal organ activity. These BAP could, he argued, render diagnosis of disease simpler and less invasive. As early as 1955, when the first Soviet scientists had only just returned from China, Podshibiakin was

[103] Quotation from Ivan Kochergin's introduction to Chzhu Lian' [Zhu Lian], *Rukovodstvo po sovremennoi chzhen'-tsziuterapii* (Moscow: Medgiz, 1959), 5-6.
[104] Pollock, *Stalin and the Soviet Science Wars,* 136-167.
[105] A. Podshibiakin, "Vlianie golovnogo mozga na vzaimootnosheniia mezhdu aktivnymi i sopriazhennymi tochkami kozhi," *Zhurnal vysshei nervnoi deiatel'nosti im. I.P. Pavlova* 2, no. 2 (1952), 198.
[106] Podshibiakin, 198.

already showing an interest in the links between BAP and acupoints.[107] By 1957, these connections were already well established. In a key article, Podshibiakin and his academic supervisor, the Lenin Prize-winner Georgii Fol'bort (1885-1960), outlined their latest thinking in *Medical Worker*.[108] The article was an explicit attempt to square Chinese medicine with Pavlovian theory and argued that, beneath terminological differences, Soviet and Chinese authors were describing the same phenomenon.[109] Now, however, the authors were able to join international conversations, citing the ideas of Head, Mackenzie, the German doctor Alfons Cornelius, and Zhu Lian. The article ended with a plea for more research into the effectiveness of acupuncture and cauterization, a technique which involves burning mugwort on acupoints, to treat a range of conditions, drawing on Pavlov's ideas about the trophic functions of the nervous system.

By the late 1950s, Podshibiakin and Fol'bort's call for further research had been taken up by senior medical practitioners and scientists whose work was proceeding along parallel paths. A volume edited by Vogralik in 1959 referred to current research by British, German, Italian and French researchers, suggesting that under Khrushchev's new policy of "peaceful coexistence," Soviet scientists could once again consider themselves part of the international research community.[110] In his introduction to the edited volume, Vogralik saw Soviet and Chinese researchers – and especially Podshibiakin and Fol'bort – standing at the forefront of international research investigating the relationship between acupoints, meridians, and the body's internal organs. Indeed, he implored Soviet researchers not to undervalue traditional Chinese understandings of treatment. He translated a diagram by the French homeopathist Emmérick-Adrien Maury, which described a typical course of successful acupunctural treatment. Maury's diagram suggested that illness was a "rupture" [*razryv*] between *yin* and *yang*, and that acupuncture, as both a diagnostic practice and a treatment acting on meridians and organs, ultimately restored *yin-yang* balance.[111]

Despite prioritizing traditional experience, Vogralik still sought verification of its findings using modern medical research, and regarded acupuncture only as the "forerunner" of modern "reflex therapy."[112] He expressed particular interest in the work of Sir John Gaddum (1900-1965), a British scientist who argued that acupuncture, through a reflex

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[107] A. Podshibiakin, "Ob izmenenii elektriheskikh potentsialov vo vnutrennix organakh i sviazannykh s nimi 'aktivnykh tochkakh' kozhi," *Fiziologicheskii zhurnal SSSR im. I.M. Sechenova* 41, no. 3 (May-July 1955): 357.

[108] G. Fol'bort and A. Podshibiakin, "Aktivnye tochki kozhi i chzhen'-tsiu terapiia," *Meditsinskii rabotnik*, July 16, 1957, 4.

[109] See also G.V. Fol'bort, "The Paths of Development of My Research" in *Problems of the Physiology of the Processes of Fatigue and Recovery* (Kyiv: Academy of Sciences Ukrainian SSSR, 1958), 44-45.

[110] V. Vogralik, ed. *Chzhen-tziu terapiia* (Gor'kii: Gor'kovskii meditsinskii institut, 1959).

[111] V. Vogralik, "Istoriia, teoriia i praktika chzhen'-tziu terapii" in Vogralik, ed., *Chzhen-tziu terapiia*, 9.

[112] Vogralik, *Osnovy,* 38.

response, released histidines and histamine to help meet the body's needs. He also tentatively endorsed the research of Pietro Orlandini, an Italian proponent of "cutaneous acupuncture," a therapy based on the idea that dying cells might have a stimulating (and thus healing) effect on the body. This treatment had its origins in "tissue therapy," a treatment invented by the Ukraine-born ophthalmologist Vladimir P. Filatov (1875-1956), which had been adopted by the Chinese Ministry of Health before it eventually became discredited in China and Soviet Union alike.[113]

Such research was integrated into Vogralik's understanding of acupuncture's mechanisms, which he summarized in a systematic "Working model of the general operative mechanism of acupuncture on the organism", which he published in an edited collection in 1959. [114] The model suggested that, after application of needling or cauterization, a series of observable biological changes followed. Bioelectric activity was generated, stimulating receptors at various levels. Simultaneously, damaged tissues released biologically active substances, resulting in changes in skin colour, blood flow, temperature, sensitivity, and voltage. These physiological responses, generated through the stimulation of specific skin areas, were associated with corresponding internal organs. Afferent nerve impulses travelled to designated centres in the medulla or sympathetic ganglia, which, in turn, activated efferent pathways to regulate pathological organs positively. Additionally, these impulses extended further along neural pathways to the reticular formation and (sub)cortical regions of the brain, triggering systemic responses. This process enhanced the body's overall defence mechanisms against pathogenic agents. In his 1961 book, Vogralik further summarized these effects as the three-tiered "local-symmetrical-general" reflexes of acupuncture treatment.[115]

Vogralik's summary displayed close similarities to Ma's model. Both highlighted regional (direct) and overall (indirect) effects that acupuncture exerted on the body and both argued that the higher nervous system played a decisive role in the transmission of stimulus. Nonetheless, Vogralik's diagram also incorporated many outcomes of Soviet medical research absent from Ma's work. The "biologically active substances" in Vogralik's first level, for example, came from Filatov's "tissue therapy," while Gaddum's research into "histidines and histamine" was also incorporated into the process. [116] This divergence

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[113] Yang and Zhang, "Pavlovian Theory," 19-20. See also B. Filatov, *Tkanevaia terapiia: biogennye stimuliatory, peresadka rogovitsy* (Kyiv: Izd. Akademiia nauk Ukraianskoi SSSR, 1953); G. Zilovy, K. Kullanda, "On the Mechanism of Tissue Therapy [关于组织疗法的作用机转问题]," trans. Luo Zhengyao, in *Chinese Medical Journal* 39, no. 11 (1953): 849-851.

[114] Vogralik, "Istoriia," 24.

[115] Vogralik, *Osnovy,* 147-153.

[116] I. Rusetskii, "Metod kitaiskogo igloukalyvaniia v nevrologicheskoi praktike," *Kazanskii meditsinskii zhurnal* 40, no. 2 (1959): 12.

suggests that Ma and Vogralik had their own distinct agendas in adopting each other's theories and knowledge.

It is interesting to note the subtle differences between the approaches of Vogralik and Rusetskii. Both were keen to use Chinese epistemologies to supplement existing knowledge, but whereas Vogralik was happy to work with traditional ideas of *yin-yang*, Rusetskii cautiously pointed out contradictions within traditional Chinese concepts.[117] For example, although *Shenting* (神庭, GV24) belongs to the *yang*-associated *Du* meridian (督脉), it is used to treat heart diseases, even though the heart—along with the liver, spleen, lungs, and kidneys—was classified as a *yin* organ in traditional Chinese medicine. Rusetskii's perplexity reflected the inherent complexity of Chinese medical theory, which had evolved over centuries. While the five *zang* (solid organs) are generally categorized as *yin* in contrast to the six *fu* (hollow organs), the heart is also associated with fire, and thus possesses attributes of *heart-yang* (*xinyang*, 心阳). This misunderstanding was likely influenced by Zhu Lian, who advocated the abandonment of complex old theories. Rusetskii, while not negating a possible connection between acupoints and Zakharin-Head zones, argued that research should focus on more promising acupoints that might provide evidence of the connection between skin and internal organs.[118]

The Russian translation of Zhu's textbook retained a section on the use of acupuncture to treat infectious diseases, which included suggestions for schistosomiasis, which had been the target of a recent public health campaign, leishmaniasis, Japanese encephalitis, whooping cough and dysentery.[119] Zhu argued that acupuncture was "no worse, and sometimes more effective, than medication," and was particularly enthusiastic about Chinese traditional therapies' successes in treating malaria.[120] She drew on Chinese parasitological research, which used Soviet scholarship to argue that acupuncture could help stimulate higher nervous activity, promote blood circulation, enhance the resistance of internal organs, and help combat the proliferation of parasites. But Soviet doctors preferred public health measures, which they communicated to Chinese colleagues who visited the Martsinovsky Institute of Malaria, Medical Parasitology and Helminthology in Moscow in 1953.[121] Fyodor Krotov (1896-1983), a high-ranking Soviet hygienist who headed a delegation of Soviet doctors that visited China in 1956, stated bluntly that his team did "not believe assertions that acupuncture treatment makes plasmodium disappear from malaria sufferers" and, amid calls for more research into Chinese traditional treatments'

[117] Vogralik, *Osnovy*, 209, 215-216.
[118] Rusetskii, "Pokrovy tela."
[119] Chzhu Lian' [Zhu Lian], *Rukovodstvo po sovremennoi chzhen' tziu-terapii* (Moscow: Medgiz, 1959), 201-204.
[120] Zhu, 201.
[121] "Tvorcheskoe sodruzhestvo," *Meditsinskii rabotnik*, May 1, 1953, 4.

effectiveness, added that it was "just as wrong to eulogise traditional Chinese medicine as it is to negate it."[122]

While such comments show that there were limits to Soviet openness to Chinese ideas, scientists and officials proved highly amenable to collaboration. Since 1954, Soviet scientists had worked closely with Chinese colleagues, first to learn the rudiments of the technique, then to apply it to scientific research and clinical practice. In doing so, Soviet and Chinese scientists adapted each other's intellectual traditions to meet their own requirements: Chinese scientists used Pavlovian ideas to confirm acupuncture's scientific validity, while Soviet scientists had increasingly drawn on acupuncture to understand the links between skin and organs. By 1960, scientists had increasingly coalesced around the idea of Biologically Active Points (or some variant thereof), linked to the idea of segmental reactions to needling or cauterization. And although this productive collaboration came to an abrupt end in 1961 with the departure of the final set of Soviet acupuncture students from China, the brief encounter between the two countries left long-lasting traces in both research and practice.[123]

Conclusion

The deepening of the Sino-Soviet split meant that the brief window of opportunity for exchanges of ideas, practices and personnel had closed by the early 1960s. In the Soviet Union, scientific research on acupuncture virtually ceased to appear after 1961 and only returned to the mainstream in the 1970s. In China, meanwhile, Zhu Lian's final demotion from Beijing in 1960 epitomized a shift in Mao-era China—one that sought to reorganize and emphasize the practical value of the country's traditional medical heritage rather than debating its theoretical foundations. However, the brief period – scarcely more than a decade – of Sino-Soviet engagement had a lasting legacy in both countries. Despite China's turn toward traditionalism, Sino-Soviet exchanges had a profound impact on Chinese acupuncture research, particularly within the enduring "scientific school," providing terminology, theoretical frameworks, and research methodologies that continued to shape the field. The idea of "biologically active points" was essentially sedimented into TCM as a synonym of "acupoints," and emerged as a key framework for the biomedical interpretation of acupuncture. In the Soviet Union, too, debates over the mechanisms of acupuncture's

[122] F.G. Krotov, "O poezdke sovetskikh uchenykh-medikov v narodnyi Kitai," *Vestnik Akademii Meditsinskikh Nauk SSSR,* no. 3 (1956): 58-62.
[123] Onëtov, "Chzhen'," 20.

effectiveness gave way to a more practical impulse to widen clinical practice and training.[124] Though active dialogue with China was no longer feasible, the establishment of medical acupuncture – or "reflex therapy" [*reflektoterapiia*], as it was commonly known – helped institutionalise the practice, with subsequent generations publishing further research, founding institutes and societies and organizing exchanges. This led to a prodigious expansion of the practice: by some estimates, there were 20,000 acupuncture practitioners in the Soviet Union at the time of its collapse – fully 1.5 to 2 percent of Soviet physicians.[125]

Yang and Zhang argue that acupuncture's popularity in the Soviet Union was "largely down to the influence of Pavlov's theory."[126] This article has shown that they are only partially correct. The brief period of exchange between China and the Soviet Union was a time in which state policies on science and medicine aligned. The Chinese impetus to "learn from Pavlov" was illustrative of a deliberate attempt to consolidate TCM through engagement with international scientific concepts, and an acknowledgment that outward-orientation was needed for progress in modernizing and validating acupuncture as a treatment. Looking to the Soviet Union offered a more ideologically palatable partnership, with a sense of East-East collaboration transcending western science. Yet Soviet science also stood to gain from the exchange. As the Stalinist period drew to a close, the Soviet Union became politically more tolerant of its scientific communities engaging with a wider range of international concepts. They demonstrably saw themselves as part of a global research community which drew on a mixture of Soviet, western and Asian research to understand acupuncture's working mechanisms. This was also the period in which the Soviet Union became occupied with the idea of the Scientific-Technological Revolution through cognizance of the fact that atomic energy, cybernetic technologies, as well as advances in genetics and pharmaceutical medicine, meant that the post-war world was very different from the one that Marx - or even Lenin - were familiar with. These new technologies could be mobilized in the building of socialism, but in order for that to be achieved, Soviet scientists had to actively engage with knowledge from outside. China's courting of Soviet scientists in the 1950s, which began with exchanges of Pavlovian texts and progressed to hands-on learning through personnel exchanges, was a welcome opportunity at a moment when new ideas and practices were being sought out. Internationalism and cooperation were part and parcel of the modernization project on both sides.

Given that these exchanges were time-limited, one could invoke Austin Jersild's argument that the Soviet Union was an "imperial scavenger," looking to its neighbours and

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[124] See 'O meropriatiiakh po dal'nsishemu rasshireniiu prakticheskogo primeneniia metoda igloukalyvaniia i usileniiu nauchnykh issledovanii v etoi oblasti', 25 June, 1973, Order of the All-Union Ministry of Health.

[125] Yang & Zhang, "Pavlovian Theory," 13

[126] Yang & Zhang, 13.

those within its sphere of influence to plunder technology, resources, and concepts for its own growth.[127] Certainly, the USSR gained a new medical technology which was then used for the benefit of the Soviet population. But as other scholars have noted, this falsely implies that agency was unidirectional: the Soviet Union scavenging from outside. Izabella Goikhman points out that China secured a high level of autonomy in recruiting Soviet specialists, and wasn't afraid to use them on its own terms.[128] Neither Jersild's nor Goikhman's account accurately characterises these exchanges. Chinese scientists, for their own part and with state support, sought out Soviet theories and concepts, and then later exchanges of personnel and transfer of technology, in order to expand, validate, and improve their own medical technology. China was every bit as active as the Soviet Union in this relationship. "Scavenging" also does a disservice to the reciprocal nature of the exchanges. Soviet and Chinese medicine mutually benefited and were developed through these interactions.

Grace Shen argues, contra Jersild, that Chinese engagement with science – and indeed all cultures' engagement with science – should go beyond influence or diffusion models and instead be considered in terms of "desire" and "utility."[129] Certainly, we should examine actors' motivations, and how exchange might have been deemed useful. But is this not self-evident to most historians? Might a more expansive consideration of the nature of "desire" get us further, perhaps in the sense of there being a "cultural imaginary" involved in these exchanges, with friendship, collaboration, co-operation, and mutual learning embodying a particular mid-century, internationalist ideal? Our sources convey a sense of genuine affective involvement on the part of the personnel involved: Vogralik's almost obsessive enthusiasm for Chinese thought and practice driving an imperative to fuse two systems of thought, and Kovrigina's feeling of "sisterhood" with her Chinese counterpart. Certainly, there are instances of more cynical embellishment of texts because of a top-down state policy of Pavlovianism in China, but there are multiple cases of serious, optimistic, engagement.

We draw a parallel here with Elizabeth McGuire's arguments: for a period of time, there was a sense of romance to China's exchanges with the Soviet Union, which were also felt in the opposite direction.[130] Our case rebalances agency in Sino-Soviet exchanges, and challenges the idea of imperial scavenging or the notion that Soviet medicine "crowded out"

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[127] Austin Jersild, "The Soviet State as Imperial Scavenger: 'Catch Up and Surpass' in the Transnational Socialist Bloc, 1950–1960," *American Historical Review,* 116, no. 1 (2011): 109–132, https://doi.org/10.1086/ahr.116.1.109.

[128] Goikhman, "Soviet-Chinese Academic Interactions".

[129] Grace Shen, "Murky Waters: Thoughts on Desire, Utility, and the 'Sea of Modern Sciences'," *Isis*, 98, no. 3 (2007): 584-596, https://doi.org/10.1086/521160.

[130] McGuire, *Red at Heart*.

Chinese tradition as an inevitable by-product of this neo-imperial relationship.[131] It also contributes to the flourishing literature on the post-Stalin period of Soviet history, showing that the models that apply to Stalinism fail to account for science in the destalinization period from the mid-1950s-1960s. For the short window of time where internationalism won out over assertions of national sovereignty, and experts were able to move across borders, affective engagements may go some way to explaining why there was a conceptual legacy of Soviet science in TCM long after the Sino-Soviet split. This endured beyond its theoretical utility – and also enabled acupuncture to flourish in the Soviet Union after physical travel, personal collaboration, and correspondence became almost impossible.

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[131] Yang & Zhang, "Pavlovian Theory," 8.