REVIEWS

Jiri Hudecek, *Reviving Ancient Chinese Mathematics: Mathematics, History and Politics in the Work of Wu Wen-Tsun*, London, New York: Routledge, 2014, xii, 210 pp.

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Monographic treatments of the lives and achievements of modern Chinese scientists in Western languages are the exception rather than the rule. This stands in sharp contrast to studies of philosophers, historians or social scientists whose biographies have become a well-established branch of research. It also differs from the situation in China where biographies of modern scientists have become increasingly popular. In recent years, even superficial observers will have noted the proliferation of almost hagiographic accounts. Most of these efforts refrain from asking methodological or theoretical questions, for example, the question of who the audience might be for such biographies or—more importantly—that of the distance separating the author from the object of research.[1] This applies even to recent efforts to employ methods of oral history. Even if they provide a large amount of useful information, such studies tend to be even less critical than traditional histories. Many display a tendency to further decontextualize the lives and achievements of scientists, since they, more or less by definition, reproduce the subjective views of the scientists themselves, who—due to expediency—are often hesitant in providing critical views or offering a larger perspective.

Claude Lévi-Strauss has famously remarked that biographical history is "histoire faible"—weak history. It only gets its "own intelligibility" when it is inserted *en bloc* into a history stronger than itself.[2]

[1] Methodological problems regarding biography in the history of science have been taken up in *Isis* 97:2 (2006), "Focus: Biography in the History of Science," Richards (2006), Terall (2006), Porter (2006) and Nye (2006).

[2] Lévi-Strauss (1962), p. 340.

The book under review is the second contribution analyzing the life of a modern Chinese mathematician in a Western language following the biography of Hua Luogeng 華羅庚 published in 1999, which however, was originally written in Chinese by Wang Yuan 王元 and only later translated into English.[3] Wu Wenjun 吳文俊 (1919-2017), who is referred to as Wu Wen-tsun by Hudecek, because this was the transcription under which he had become known in the West, was without doubt one of the most gifted and celebrated mathematicians of China during the twentieth century. His prominence among a broader Chinese public is partially due to the fact that he was awarded the highest National Science and Technology Award in 2001 by President Jiang Zemin 江澤民. He thus fits well into the Chinese master-narrative of strengthening the country by means of science that has become a prominent feature of official and public discourse and has catapulted a number of scientific heroes into the public limelight. Examples are the rocket scientist Qian Xuesen 錢學森, and those who contributed to the development of the Chinese nuclear bomb.[4]

In 2001, Wu Wenjun had already had a more than 50-year-long career in the Chinese scientific establishment. Moreover, he had not only gained prominence in China but was also comparatively well known internationally. Putting him at the center of an in-depth study of a scientific field thus makes a lot of sense. Hudecek handles this task masterfully, and his book succeeds especially in situating Wu Wenjun in the context of "history and politics," as the subtitle suggests. The author very consciously treats Wu's life and his achievements within a social framework that is dominated by political developments, thus dispelling Lévi-Strauss's reservations about the explanatory force of biographical history.

Hudecek first briefly reviews Wu Wenjun's education and early career, but his story starts in earnest only in 1951, when Wu returned from his studies in France. According to Hudecek, Wu Wenjun's early years between 1952 and 1958, when he worked mainly on topics related to topology at the newly founded Institute of Mathematics of the Academy of Sciences, were the "golden years" (p. 29) of his career. Hudecek hints only briefly at the thought reform movement of 1952, which Wu experienced while still teaching at Peking University and that "frustrated him." One might say that Wu was actually rather lucky here, since the movement left a trail of destruction at the Academy of Sciences, as can be gleaned from the diaries of Zhu Kezhen 竺可楨 (1890-1974), at that time vice-president of the Academy. What becomes clear, and might have been formulated more explicitly by the author, is that already in the 1950s Wu Wenjun's career began to suffer from China's isolation from international scientific

[3] Wang (1999).

[4] The life of Qian Xuesen has been the subject of several films in China, including a soap opera, which was broadcasted in 40 installments in 2012.

discourse. It is remarkable that Wu at that time was quoted more often abroad than in China (pp. 29-30).

Hudecek's narrative of the influence of politics on science begins in 1957 with the anti-rightist movement that followed the Hundred Flowers campaign. He focusses mainly on the Institute of Mathematics of the Chinese Academy of Sciences where Wu was working at the time. By looking closely into the development of the Institute, Hudecek ostensibly wants to go beyond a narrative focused on conflicts between scientists/intellectuals and the Party. Instead he adopts a model derived from an early work of Suttmeier's that observes the fluctuations of Chinese science policy[5] but stresses the long-term goals, which were to be attained along a path of "social learning and development" (pp. 39-40). While such a model might have its merits, especially for explaining smaller shifts in mathematical practice among the members of the Institute, the fact remains that in the end it was still the larger political movements that shaped individual approaches to mathematical research and restricted "academic freedom." In fact, it would be interesting to find out to what extent Wu Wenjun's reluctance to return to China from an academic sojourn in France in 1958—a "murky episode" as Hudecek terms it (p. 29)—was related to these developments. Wu Wenjun seems to have depicted it as a sort of misunderstanding and available sources are insufficient to obtain a clearer picture.

Even if, as Hudecek remarks, Wu Wenjun attained the goal of producing socially relevant research by turning from topology to game theory from 1958 onwards, and if this was indeed an approach he "completely internalized" (p. 61), the forced nature of his shift cannot be denied, as Hudecek also acknowledges. The same seems to apply to the Cultural Revolution, which in the book is treated at length. In respect to Wu Wenjun's research, the Cultural Revolution is credited with providing him with a "long-term-research orientation" (p. 74). The book depicts the chaos that prevailed in the Institute of Mathematics and highlights the utter waste of talent, since no research was possible over long periods of time. Although Hudecek describes the problems Wu and his family faced, he takes seriously Wu's own narrative that the early period of the Cultural Revolution during which mathematical work was basically not allowed provided him with the possibility to read widely. This reading included the works of Mao Zedong, the Marxist classics, etc. In a 2015 biography, Wu even referred to the Cultural Revolution as his second period of "intellectual liberation" (*sixiang jiefang* 思想解放). There is something ironic in the claim that it was also during the Cultural Revolution—a movement that was highly destructive and hostile to tradition—that Wu turned to traditional Chinese mathematics. The infamous campaign "Criticising Lin

[5] Suttmeier (1974).

Biao and Confucius" (*Pi Lin pi Kong* 批林批孔) provided this rare opening. Wu published his first article on Chinese mathematical history under the pseudonym Gu Jinyong 顧今用, a pun on the slogan "Make the past serve the present" (*gu wei jin yong* 古爲今用), that was particularly popular during the 1950s and the Great Leap Forward. Hudecek suggests that Wu Wenjun began at this time to develop his idea of a Chinese mathematical style that would become important to his work on the "mechanization of mathematics." Hudecek is sceptical about the extent to which Wu Wenjun's work on this problematique, for which he finally won international acclaim, was indeed indebted to the Chinese tradition. It served, however, as an inspiration, and certainly played a role in shaping Wu's "complicated, almost split identity," as Hudecek fittingly calls it, that is as someone who was at the same time an insider to the trade and a permanent rebel inclined to create mathematical countercultures (p. 155).

Wu Wenjun's own take on his biography was published in the form of an oral history in 2015, one year after the publication of Hudecek's book. It is titled *Going My Own Way* (*Zou ziji de lu* 走自己的路). Although the book refrains from giving an overtly heroic description of Wu's life and achievements, the title still suggests—and actually aims at—providing the picture of an outstanding scientist, which Wu certainly was, who almost miraculously undeterred by the political turmoil stubbornly followed his own line of thought to success.[6] After reading Hudecek's book, however, attributing Wu so much agency seems somewhat ironic. It becomes very clear that political constraints determined to quite some extent the direction that Wu eventually had to take. Hudecek pointedly discusses this irony in the last chapter of his book, quite appropriately (and perhaps a little polemically) titled "Saving the nation with mathematics and its history." Hudecek shows that Wu Wenjun's turn to traditional Chinese mathematics, and the exceptionalist claims Wu related to it, must be understood against the backdrop of his decision to return to China in 1951. As the author very convincingly argues, Wu wanted "both China and world mathematics to benefit from the opportunities he has given up. Wu's cultural nationalism is thus built as much on his lifelong patriotism as on the sacrifices he had to make it because of it" (p. 165). As Hudecek mentions (p. 139), in 1981, at the age of 51, Wu Wenjun became a member of the Communist Party—a wish he had harbored, allegedly, for a long time. To some extent this could be seen as an act of ultimate self-denial—why should someone become a member of an organization that had done so much to make one's life miserable and might have destroyed an even more extraordinary career? To be sure, Wu was not the only Chinese intellectual to follow this path. Yue Daiyun 乐黛云 (b. 1931), for instance, wife of philosopher Tang Yijie

[6] Wu (2015).

湯一介 (1927-2014) and an outstanding professor of comparative literature, re-joined the Party after the Cultural Revolution, even though she had been expelled from it during the Anti-Rightist campaign in 1958 and had suffered many hardships in its aftermath.[7] Anita Chan has assessed Yue's actions as a consequence of "self-deception as a survival strategy." For Yue Daiyun rejoining the Party meant that she could "reaffirm her own integrity and her purpose in life," and that she would not "have to face feelings of guilt about some of the choices she and her husband had made."[8] Here we have a clear parallel to Wu Wenjun, one that we may take as a reminder of the extent to which a critical approach to biography, as skillfully executed by Hudecek in his book, might help us to understand the crucial issue of the relationship between scientists and intellectuals and the Communist state. We need to note, however, that in spite of all the hardship Wu Wenjun suffered during his career, he still must be counted among the "winners," or at least the "lucky ones," among Chinese scientific personnel. The history of unful-filled aspirations and destruction of talent—of the "losers" or the "less lucky ones"—which is an equally significant part of the development of Chinese mathematics during the second half of the twentieth century, still awaits treatment. Studies filling this lacuna, however, will remain scarce until the relevant archives are (re-)opened.

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[7] Yue and Wakeman (1985).

[8] Chan (1988), p. 357.

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