BOOK REVIEWS

Conditions of Science

Science and Dissent in Post-Mao China. The Politics of Knowledge. H. LYMAN MILLER. University of Washington Press, Seattle, 1996. xii, 370 pp. $38, ISBN 0-295-97505-9; paper, $18.95, ISBN 0-295-97532-6.

When Deng Xiaoping came to power in China in 1978, one of his first moves was to reverse the Maoist politicization of intellectual activity, particularly in the sciences. He promised scientists that they would be able to carry on their work free of political interference. Despite Deng's intentions, Lyman Miller in *Science and Dissent in Post-Mao China* shows that this policy was not altogether successful. In contrast to the Mao era (1949–76), when all intellectual endeavor, including science, was under the tight control of the party-state, under Deng scientists and most intellectuals were granted a degree of freedom in their intellectual activity. Nevertheless, some party interference and Marxist ideological guidance continued, especially in areas related to politics. This was true even in the sciences.

Specifically, Miller details the debate between physicists on the nature of the universe—those who espoused the Einstein view that the universe is "finite but unbounded" and those who insisted that it was "infinite" in accordance with the views of Engels and Lenin. The former group, led by the cosmologist Fang Lizhi and the historian of science Xu Liangying, asserted that the latter's view politicized science; the latter group insisted that Fang's and Xu's view was a violation of Marxist philosophy. This debate created two rival groups. The Fang and Xu group regarded Marxism as only one of a "hundred schools" of thought, whereas the opposing group regarded Marxism as still dominant over the other schools.

Fang, Xu, and their disciples linked their demand for the autonomy and pluralism of science with democracy. They asserted that democracy fostered science because it provided the institutions and political context that made possible individual inquiry, questioning of preconceived notions, openness to new ideas, readiness to think independently, and equal treatment. Moreover, as the Deng leadership became increasingly focused by the late 1980s on economic reform, Fang and Xu charged that its socialist utilitarian attitude toward science left little room for the pursuit of science for its own sake and had led to the relative impoverishment of basic research and theoretical scientists.

Miller does a fine job of delineating the debate between the scientific monists and pluralists in the Deng era, but he accepts uncritically the assertion of the pluralists that democracy was necessary in order for science to flourish. It may be true that science stagnates and may even wither under a totalitarian regime that controls and manipulates science for its own political purposes, as happened in Nazi Germany, Stalin's Soviet Union, and Mao's China. But it is not necessarily true that it stagnates under authoritarian regimes that allow a degree of intellectual freedom. If that were the case there would not have been any scientific progress before the 20th century. Intellectual pluralism can flourish and has done so under authoritarian regimes.

In addition, the focus on applied science and commercialism that Fang and Xu attribute to Deng's socialist utilitarian policies has much less to do with socialism than with China's move to the market in the 1980s. Research scientists are leaving their laboratories and research institutes to make money in the markets opened up by Deng's reforms. In the former Soviet Union and even under Mao, more scientists were involved in pure science and had more status than they now have in Deng's market economy and in Russia's currently marketizing and democratizing society. Fang's and Xu's distress over the market's impact on science notwithstanding, the move to the market is one of the preconditions for the democratization they much desire.

Miller claims that scientific liberals provided much of the rhetoric of dissent at Tiananmen Square in the spring 1989 demonstrations (p. 241). Indeed, a few scientists, such as Fang and Xu, were important figures in the revival of political liberalism in post-Mao China, and their ideas may have influenced the student leaders of the pro-democracy movement. But their numbers were meager in comparison with the numbers of social scientists, writers, and even Marxist thinkers involved in the political reform movement in Deng's China. Moreover, the proportion of scientists in China's dissident movement is small by comparison with the number involved in the Soviet dissident movement. Whereas scientists along with writers led the movement for democracy in the former Soviet Union, they have been a distinct minority in the movement in China. Natural scientists, even under Deng's socialist regime, have more privileges than their social science counterparts. Whereas China's social scientists are criticized for their academic work as well as for their political views, even China's most outspoken natural scientists, as Miller points out, are criticized only for their political views, not for their scientific views.

China's scientific dissidents, such as Fang and Xu, are right when they say that China needs democracy, but they need it so they can speak out on political issues, not necessarily on scientific issues. Their demand for democracy has less to do with the needs of China's scientists than with the need to expose the corruption now rampant in official circles, to limit the party's still arbitrary abuse of power, and to protect freedom of expression on public affairs. On scientific matters, China's scientists have a greater degree of freedom and autonomy than other intellectual and social groups. Democracy is important for the improvement of the life and livelihood of China's population in general. The standard of living of China's scientists may have declined, but compared to the majority of the population they still are a privileged lot.

Despite his lack of critical distance from his subjects, Miller's chronicle of the emergence of dissent in China's scientific community and delineation of its important debates reveal an area of China's intellectual life that hitherto has been obscured and little understood. In this respect, he has done a service not only to those who study China but also to scientists who may want to know about the political concerns of their Chinese counterparts.

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Brain Structures

Comparative Vertebrate Neuroanatomy. Evolution and Adaptation. ANN B. BUTLER AND WILLIAM HOODS. Wiley-Liss, New York, 1996. xviii, 514 pp., illus. $74.95 or £60. ISBN 0-471-8889-3.

Anyone who remembers Herrick's *Brain of the Tiger Salamander* or Craigie's *Neuroanatomy of the Rat* will recall with pleasure how an experienced hand can through a deceptively simple account provide a broad perspective of the whole nervous system, in the case of the