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How the Chinese Scientist Survives

Leo A. Orleans

Just as every poor harvest in China precipitates predictions of mass starvation, the periodic intensification of attacks against scientists—particularly foreign-trained scientists—inevitably brings forth prophesies that science in China has suffered a mortal blow from which it is not likely to recover. This is not really surprising, for the attacks against these "reactionary bourgeois authorities and specialists" are indeed unrestrained. The latest assaults on scientists during the Cultural Revolution (1966 to 1969)—including the disappearance of all scientific journals, prescribed sojourns on the commune or in a factory, and the requirement that scientists "lay bare their mistakes and shortcomings"—were especially severe and, for Westerners, difficult to accept. Yet, despite the excesses of the Cultural Revolution, China has once again bounced back, and Chinese science and technology seem to be none the worse for it. To understand how this is possible, it is necessary to look at the developments during the past half-dozen years not from a Western perspective, but from the vantage point of the Chinese scientist.

One law of nature that is particularly applicable to the scientist in China is natural selection. The human species is quite adept at adapting to, even prospering in, what might seem to be a hostile environment. This practical trait of the Chinese people is well known—they are masters at enduring adversity, whether caused by nature or by man. After almost 20 years of recurring thought reforms, surely the ideologically weak species have been wiped out by now, or, to use their favorite expression, "plucked out." Those who survived thought reforms prior to the Cultural Revolution surely managed to endure the most recent onslaught as well. If security and professional activity require reciting the thoughts of Mao or confessing the crime of one's heritage, then the pain is certainly compensated by the ensuing salvation.

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The Experience of Kuo Mo-jo

Kuo Mo-jo—who is, among other things, vice-chairman of the Standing Committee of the National People's Congress, chairman of the Chinese Academy of Sciences, and China's top intellectual—is not the average scientist; but, because thousands of other scientists suffered an experience very similar to his during the Cultural Revolution, Kuo Mo-jo's well-publicized experience is worth relating. In early May 1966, Kuo made a public confession that was reported around the world. In his criticism of his past actions and thoughts he said (*1*):

> In the past scores of years, a pen was always in my hand, writing and translating works amounting to many millions of words. However, in the light of present-day standards, what I have written, strictly speaking, should all be burned. It has no value—none whatsoever.

The reason for his inadequacy was, of course, the fact that he had not studied Chairman Mao's thinking as he should have.

When this confession was published around the world, many assumed that this was obviously the end of Kuo Mo-jo. Only 2 weeks later, however, he told a leading member of the Japanese Liberal-Democratic Party who was visiting Peking that he did not anticipate any changes in his position or his role, pointing out that "self-criticism is important in China, especially within the Communist Party. Thus my self-criticism is nothing new. I do not believe one's activities will be stopped or position changed each time he engages in self-criticism. I will continue with my efforts" (*2*). He was right. Although under considerable pressure during the Cultural Revolution, he survived and continues to be a leading member of China's scientific and cultural community. His story is by no means unique (*3*).

Common Sense and Understanding

Most important from the individual scientist's point of view is that, despite the name-calling and the vilification, he knows his own worth and importance to the regime, and, between the attacks on his person, he is told just that in no uncertain terms. The more bitter the attacks, the more likely there are to be balancing statements emphasizing the need for the expertise of the scientist. As was true after thought reforms in former years, it is not difficult to find appropriate examples published since the Cultural Revolution. For instance, the following was published in 1971 (*4*):

> The participation of engineers and technicians is indispensable in designing industrial products and laying out technical processes, in trial-producing new products, in technical innovations, in scientific research, and so forth. A multitude of facts fully prove that the masses of engineering and technical personnel are useful, not useless.

Also in 1971, the Revolutionary Committee of the Coal Research Institute in Fushun reached the conclusion (no doubt after lengthy and tedious discussions) that "intellectuals were not a burden but a precious asset for the cause of Socialist revolution. Without the participation of intellectuals, our cause of Socialist revolution and construction could not be victorious" (*5*). All of this is obvious and funny to us, but we should also give the Chinese scientist credit for common sense and a sense of humor: most likely, he too considers the above obvious and funny.

Above all, he is wise enough to understand Peking's dilemma and to appreciate both why these attacks are made against him and his knowledge and how the attacks are being utilized by the regime. He knows that China has been "walking on two legs"—relying on both the old and the new and simultaneously employing modern and indigenous methods of production. That is why, in addition to making a significant investment in science and technology, increasing the size of the scientific and technical manpower pool, and in general expanding the bona fide scientific and technological establishment, China has yet another goal. Mao is convinced that true modernization can never really be achieved unless the general level not only of the workers, but of the peasants as well, is raised to a reasonable level of skill and technical common sense. When Mao says, "The lowly are the most intelligent, the elite the most ignorant," he is only trying to increase the self-confidence of the masses, and he is using the backs of the intellectuals as stepping-stones to reach his objective. He knows the value of scientists and he also knows that they will withstand the abuse. That is why Chinese press and radio continue to tell the people (*6*):

> What in the world is science? All sciences and technology are the result of the wisdom and talents of the working people that have been summed up and proven correct in practice. Foreign countries have sciences and technology, so does China.

The downgrading of Western-trained scientists seems to be an effective adjunct to the other policies and programs directed at raising the technical awareness of the Chinese people.

Scientists and the Masses

Western adulation of science and scientists is not compatible with the treatment that is implied in sending scientists to work among the masses. Here too, however, it is not the intent of the regime to bury scientists in the soil; nor does it believe that scientific genius will somehow spring up from the soil. It is important to realize that scientists are sent down to the farm or the factory essentially to pursue their specialization—but to pursue it in terms of specific needs of the economy. Who is sent to work in the rural areas? Primarily scientists from the institutes of agriculture, veterinary sciences, plant genetics, botany, and so on, who in one way or another can make a direct contribution to the productivity of the peasants and perhaps even learn from them. The scientific and technical personnel whose work is relevant to industry and the urban economy are sent to labor with the workers in a factory or other enterprise. For example, one newspaper reported that in December 1970 some members of the Botany Research Institute went to a vegetable station and succeeded in developing a method of storing persimmons longer, while members of the Physics Research Institute went to a grinding wheel plant in the city and mechanized the operation of wheel turning, which had been done by hand before. These are not permanent assignments; usually they require only a few weeks to a few months away from the home base. Whether it is fair to contend that the atmosphere in China is unfavorable to serious research depends on one's definition of serious research. To the Chinese, practical research that supports production is serious research.

There is another aspect of the problem that should be considered in any discussion of how the Chinese specialists themselves may be reacting to Peking's policies. It is difficult to imagine, but isn't it conceivable that a significant proportion of the scientists actually support those actions of the regime which seem to be directed against them and see a certain validity to the approach in terms of the economy and the future of the country? After all, the overwhelming majority of them have been trained in China and are a product of the system—and economic, social, and political contradictions are not uncommon in any country that is making rapid technological strides.

Even looking at China from the outside, one may posit that, given the level of economic development and the existing priorities, Peking's concept of what the scientists' role should be is not entirely unreasonable. In the United States where funds for basic research have been plentiful, sweeping changes are now contemplated by the government: "Research in the United States is about to undergo a basic change in which far greater emphasis will be placed on quick and practical

benefits to society" (*7*). If the budgetary squeeze is affecting science in America, then China can certainly ill afford the luxury of having her scientists spend their time on basic research, especially because there is so much to be done in terms of contributing to the country's immediate needs. Despite vocal encouragement of self-reliance, the Chinese are well aware that, although they can benefit from scientific advances made in other countries, a recurring problem with a particular machine or a requirement for a new insecticide has an immediate adverse effect on the economy. Even original or basic research is not out of the question. The only stipulation is that such research be chosen from the needs of production or for the benefit of the people rather than from an abstract interest.

Scientists and the Military

The consequence of the Cultural Revolution that is considered to be the most disturbing in terms of scientists and the most disruptive in terms of science was the stationing of units of the People's Liberation Army (PLA) in the Academy of Sciences and many of its institutes. Placing military representatives in scientific institutions is ludicrous and undoubtedly damaging to any professional activity, but there is the inevitable "but." The "aid-the-left," or "three-support and two-military," personnel, as they were generally known, seem to have been stationed in virtually all industrial, construction, communication, finance, trade, cultural, and educational "units" of any size, as well as at the production brigade level (a subdivision of the commune) in agriculture. They were there to take the place of the Communist Party members who exercised controls prior to the Cultural Revolution and whose role was severely damaged. The two main functions of the PLA representatives were administering the institutions and being responsible for a correct political philosophy on the part of the personnel of these enterprises and establishments. In that sense, their role was not too different from that of the party representatives who, for the first 16 years, were accused of stifling research at the academy. True, some of the scientists were themselves party members, but seldom a year passed without a reported tug-of-war between the party and the scientists.

Undoubtedly there were serious "differences" between the scientists and the new military administrators at the height of the Cultural Revolution. With the gradual normalization of conditions in China, however, the role of the PLA has declined, particularly in science, where these military administrators do not have the necessary background to involve themselves in the day-to-day, work-related activities of the members of the scientific institutions.

Common Sense and the "Abuse" of Scientists

People sometimes overreact to words and, in so doing, fail to look beyond them. We in this country have finally become accustomed to China's flamboyant language in the field of foreign relations, and few people take seriously Peking's statements that China will smash American imperialism and Soviet revisionism. The same restraint and common sense must be exercised in considering statements relating to domestic problems and policies. Anthony Wedgwood, a member of the British Parliament and a recent visitor to China, pointed out that literal translations from Chinese often make nonsense of ideas that are common to both societies and suggests that the only thing to do is to "listen patiently while these concepts wash over you and gradually, as you get familiar with them, an understanding of what they mean comes naturally" (*8*, p. 10).

It is certainly true that many scientists have spent time in the so-called May 7 cadres' schools that were set up in the countryside—"the largest classroom with the best teachers"—to provide for ideological remolding, but these were temporary assignments. It is also true that even now scientists and engineers continue to spend a proportion of their time on the farm or in a factory. But references to scientists engaging in "scientific activity side by side with the worker comrades" should not shock the reader. The scientist is there primarily as a teacher, although it is not inconceivable that, in the process of this forced contact, he also learns something and is therefore better able, within the new system of priorities, to support production. The point is that, except perhaps during the most militant periods, scientists are not abused. Thus the seemingly unrestrained attacks against his Chinese colleagues are likely to be much more painful to the Western scientist, who reads them out of context, than they are to the object of the abuse, who probably has become quite immune through exposure and who is pursuing his daily responsibilities, if not with enthusiasm, then at least with discerning acquiescence.

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2. As reported in the *Japan Times*, 17 May 1966; see the Foreign Broadcast Information Service daily report, "Communist China," 17 May 1966.
3. Take, for example, the case of Hua Lo-keng, an internationally recognized scientist. Trained in Cambridge University and the University of Berlin, this mathematician came under such fierce fire during the Cultural Revolution that many thought he would never reemerge. He did, however, and ended up at Nixon's table during the President's visit to Peking.
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