Science, Elitism, and Economic Readjustment in China

Leo A. Orleans

The problems in science and technology with which China has been struggling over the past few years appear to be characteristic of a nation striving to achieve rapid modernization with limited resources. Since earlier efforts to solve them have inevitably been disrupted by political upheavals, most of the basic problems which concerned the country in previous decades are still in the process of being resolved and, having lived through the unhappy period of the Cultural Revolution and its aftermath, Beijing's emphasis is once again on making up for lost time. How best to organize and manage the scientific establishment? How to allocate the science budget? What priority should be given to basic versus applied research? How to train and best utilize the scarce scientific and technological manpower and coordinate scientific research with China's economic needs?

These and other questions related to the "fourth modernization"—to science and technology—are fully discussed in the Chinese media and analyzed by foreign observers. There is, however, an important issue which is seldom mentioned, in part because of its sensitivity and in part because there are no clear-cut answers to the questions which might be raised. It has to do with the influence of China's scientific elite on policies in science and technology and with the possibility that this influence is not always in harmony with the country's broader national goals and aspirations.

The antagonism which characterized relations between the Chinese Communist Party and China's higher intellectuals is well known. The superior qualifications and abilities—especially of the scientists—have always been recognized as indispensable to nation building, but professionals' insistence on independent intellectual thought is anathema to party supremacy in all spheres and to the requirement for ideological orthodoxy. Over the years there have been many shifts in the relations between the state and the scientists, and it seems that even now the restless Chinese pendulum continues to swing. By 1978 scientists, so deeply scarred by the Cultural Revolution, returned to a position of strength and authority in China—a most basic prerequisite for modernization. It appears, however, that in their rapid ascent in the years since the gang of four, the higher echelon scientists have tended to revert to the elitist and isolated position of the traditional Chinese intellectual, and by 1980 one could sense some disillusionment on the part of the policymakers with the attitudes and demands of the scientific community. There seems to be a realization that, important as they may be, perhaps science and technology are not the panacea for all of China's ills, after all, and therefore require some restraints.

The quick rise and recent downturn of the influence of the Chinese scientist prompt some important questions. They are questions that are especially difficult to ask so soon after the Cultural Revolution, with its unmerciful attacks on the "ingrained bourgeois individualism" of intellectuals in general and scientists in particular. Is it possible that there was a basis for at least some of Mao's accusations against the scientists? Is it indeed an ingrained characteristic of the scientists to want to build their own "independent kingdom"? Is it fair to suggest that while scientists may no longer live in ivory towers, as claimed by Mao, they don't care to venture too far from the protective walls of these towers? Can today's China accommodate a conspicuous return to the historical dichotomy between the man of learning and the rest of the society? One who should know about the subject, Fang Yi, China's top administrator of science, wrote that "in our scientific research organs and social circles the practice of egalitarianism poses a serious problem" (*1*).

A degree of scientific exclusiveness is a universal phenomenon, and up to a point it is supported and perpetuated by all of us. But why should the dichotomy between the man of science and the rest of society be greater in China than in the United States, for example? Socialist nations may accuse the United States of capitalist exploitation and sharp socioeconomic distinctions but, in fact, elitism of any sort, including scientific elitism, is moderated by our history, religious traditions, and social attitudes and pressures. Furthermore, American scientists are just as likely as anyone else to have a proletarian heritage—which they not only remember, but often wear as a badge of distinction.

Conversely, despite being pounded by propaganda expounding egalitarian theories for 30 years, China is still anything but a classless society. In part it is a characteristic of all Third World countries, where it is extremely difficult to cross over classes and where advanced education is essentially reserved for the offspring of those in the society who already enjoy some cultural and economic advantages. In China, the Cultural Revolution clearly demonstrated the fallacy of the theoretically attractive notion that given the opportunity, the peasant youth should be able to achieve as much as an urban youth of a more advantaged background. The failure of this experiment probably only reinforced the strong class consciousnesss ever present in Chinese society and the tradition, inadvertently reinforced by some of Mao's policies, of transmitting class background from one generation to the next. Furthermore, in the past few years there has reappeared a clear-cut distinction between mental and manual labor—a distinction which is now considered to be natural and justified as the inevitable consequence of historical progression and not as an aspect of capitalist exploitation.

Now, let us pursue the U.S.-China comparison from another perspective. In the United States, as in other advanced capitalist nations, much of the distinction between science and technology has been blurred. As pointed out by Bode (*2*), today's technology requires a thorough and fundamental understanding of a situation by procedures similar to those of pure science. "Seen in this perspective," he says, "technology appears as a natural extension of science, rather than as something essentially different." In

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China, there has been an extremely uneven progress of the various fields, but in general, because of the much lower level of development, the gap between science and technology is still very wide. These differences have a direct bearing on career perceptions in the two countries.

In the United States, a young science graduate with his new diploma has a variety of options within which he can pursue his particular interests. His career in research can develop just as successfully whether he chooses to pursue it in a university, in a private high-technology corporation, or in a government-supported research institute, and he can achieve as much personal and professional satisfaction and prestige with the Massachusetts Institute of Technology as with IBM or the National Institutes of Health, for example. In other words, the intimate interaction between science, technology, and society in the United States, as well as our economic and institutional framework, opens up innumerable choices for a professional career in research and development, in either the private or the public sector.

For the science graduate from a Chinese university, however, there is basically only one very narrow path to the top—the top being a research institute of the Chinese Academy of Sciences, the Chinese Academy of Medical Sciences, the Chinese Academy of Agricultural Sciences, or one of the more prestigious key universities. At worst, the Chinese science graduate must be able to get into a research institute under the jurisdiction of one of the appropriate production ministries. He knows only too well the vast professional, social, and economic differences between a career in the Chinese Academy of Sciences and a career in any other sector of the economy. And he knows, too, that because of restricted mobility, a factory laboratory is not a stepping-stone to an institute or an academy. Prestige and influence come not simply from such tangibles as higher salaries and better housing, but also from a host of intangibles that make an academy position extremely valuable and desirable. If the young Chinese scientist makes it to the Academy of Sciences, he is likely to follow the precedent of those who are already there, that is, maintain as big a distance as possible between research in the institute and the practical problems of the economy.

This description of an elitist tendency in Chinese science is admittedly overgeneralized. As in everything else, there are individual differences and there are differences between specific fields of science. The scientific elitism that does exist, however, cannot be treated lightly because of its potential potency within the state and party hierarchy. In the United States, despite the existence of the Office of Science and Technology Policy, under the science and technology adviser to the President, the influence of scientists is filtered through a variety of government and professional institutions. In China, scientists are not sought out only for advice and suggestions about innumerable decisions related to the modernization process; some actually occupy key positions in government, while many more can exert significant influence through highly developed informal relations with officials in policy-making positions.

In this article I review China's current efforts at economic readjustment in terms of their impact on policies and programs in science and technology and speculate about the likely resistance the leadership is facing from China's very loosely knit "science lobby."

The Brief Spell of Optimism

Considering the lowly position to which Chinese science and technology had dropped by 1976, no one can deny the tremendous progress that has been made since the fall of the gang of four. After a decade of abuse, it was not easy to undo the damage that had been done, to rebuild the scientific establishment, and to convince the nation that, far from being "parasites," China's scientists represent a productive force indispensable to the goals set out by the four modernizations.

The first solid stepping-stone of the transition period was reached in March 1978, when China held its major National Science Conference. Some 6000 delegates sat for almost 2 weeks in Beijing's Great Hall of the People to hear leaders in both the government and the sciences discuss past mistakes and outline new directions for China's science and technology (*3*). Although some of the speeches implied that there was still an absence of consensus, the speakers left no doubt about the priority the new leadership assigned to science and technology. Reflecting release from the political shackles which so severely constrained scientific development, the changes were comprehensive and the goals set forth at the conference were understandably ambitious—sometimes even unrealistic.

In his report to the conference, Fang Yi, who was then the vice premier of the State Council and minister in charge of the State Scientific and Technological Commission, admitted that China lagged 15 to 20 years behind advanced world levels in many branches of science and technology; nevertheless, he was optimistic about the future. It was his hope that by 1985 China would build new research facilities, expand research, rapidly increase the number of professional research workers, and in the process "approach or reach the advanced world levels of the 1970's in a number of important branches of science and technology." This, in turn, would make it possible for China to "catch up or surpass advanced world levels in all branches" by the year 2000. Such general designs should never be taken literally, but they serve a national need for direction.

More indicative were some of the specifics spelled out by Fang Yi in presenting the outline of the 8-year plan for science. It was as if the cork had been popped from a long-stoppered bottle, and all the pent-up energy and ideas had escaped into the plans and projects for China's modernization of science and technology. The plan identified research needs in 27 "spheres," including oceanography, environmental protection, medicine, transportation, finance, and education, but gave special prominence to the following eight fields: agriculture, energy, material science, computer science, lasers, space science, high-energy physics, and genetic engineering. In these priority fields Fang Yi identified 108 key projects for special attention. It was a grandiose bill of fare, which clearly reflected not only national priorities, but also special interests of individual scientists or groups of scientists.

The euphoria about the future did not dim the realization that first some important political and administrative changes had to be made to strengthen the scientific establishment. As part of this process, the powerful State Scientific and Technological Commission was reestablished under the State Council, to coordinate China's national scientific activities. The Chinese Academy of Sciences, which lost most of its administrative authority during the Cultural Revolution, was also gradually restored to its place of eminence and influence, resuming its responsibility for planning, directing, and supporting research. It also assumed the critical role of selecting and training China's most outstanding students for graduate studies in one of its research institutes, of which there are now 117. Scientific associations began to flourish once again. Most important, politics, which

dominated science as it did everything else when the gang of four was in command, had to be exorcised from the system, and control of research had to be returned to the scientists. There are still complaints that some directors of research have little real power because party leaders believe that they "should have the final say in everything," but in general, "expertness" has definitely taken over from "redness." Professionals are judged solely on their performance, ranks and titles have been reinstated, and prizes and other incentives have been reintroduced. Contacts with foreign scientists and institutions have been established and nurtured into useful collaborative arrangements. Despite some lingering opposition to such drastic and rapidly implemented changes, in the first months of 1979 there was no doubt that science and scientists were back on top.

China's economy was also experiencing a brief period of euphoria in 1978—a condition that was reflected in the ambitious goals and plans for the four modernizations laid out by Hua Guofeng to the National People's Congress that year. Soon, however, "as a result of the economic policies and reforms adopted by the post-Mao leadership . . . budget deficits, inflation, import surpluses, declining growth rates, large pockets of poverty in rural areas, and urban unemployment had become problems of serious concern" (*4*), and recently established targets had to be drastically scaled down. Chinese optimism in 1978, encouraged by well-wishing foreign advisers and trade-wishing foreign businessmen, resulted in extravagant industrial schemes, which soon had to be suspended, and equally ambitious and varied imports of foreign technology, which China was not yet able to digest. "To ensure that foreign twigs can take root, bud, blossom and bear fruit in China," said a commentator in the *People's Daily*, "we must prepare excellent soil and create the necessary conditions of all kinds" (*5*).

In this fundamental reassessment of economic objectives and realignment of development strategy, science could not be excluded, and it too was charged to "retreat in the course of readjustment." Consequently, China's scientists are once again finding themselves on a downward incline and, gentle though it may be, many of them must have a sense of déjà vu. Just what are the current complaints about science and technology and what are the changes policy-makers are pressuring the scientists to undertake?

Criticism and Reassessment

In China, major policy changes are seldom announced abruptly. There is usually a period when support for existing policies and the expression of new ideas and criticisms appear simultaneously in statements of various publications and officials. Gradually, the direction of the proposed policy changes becomes clearer, until finally all doubt disappears about what Beijing's actual intentions are. By then, the individuals most affected are adequately tempered and acceptance should be more gracious. This was the process that was evident in 1980 with regard to science. There was still much talk about "big science" (often used as a euphemism for basic research), research activities were still proliferating, and leaders of the Chinese Academy of Sciences continued to stress that "there should be no taboos in science." At the same time there was a rapid proliferation of articles discussing the need for scientists to become more involved in the nation's practical problems, to be more conscious of economic constraints on research, and to give priority to improving productivity, especially in agriculture and light industries. Introductory caveats about scientific freedom have become sparser and the direction that science is supposed to take is presented in no uncertain terms.

There is no shortage of articles and speeches in the Chinese press commenting on the scientific activities of the past few years. The following is taken from an article by two authors in a June 1981 Shanghai newspaper. It summarizes all the important issues that have been bandied about and implies an accurate representation of the position now held by the Party Central Committee and the State Council (*6*).

As prescribed, the first few paragraphs of the article provide the appropriate political setting, which sometimes can be quite confusing. Depending on the particular moment in China's political cycles, all errors—even the same ones—are blamed either on "leftists" or on "rightists." For example, during the Cultural Revolution and the years that followed, the inclination of scientists to engage in basic research was attributed to their rightist tendencies; now, the very same inclinations are termed leftist errors. Another quick shift is occurring in the use of the term "productive force." Only a few years ago, the people of China were repeatedly told that, contrary to the notion held by the leftists (the gang), scientists are an integral part of the country's productive forces, that is, just like workers and peasants. Now, however, we learn that "to simply say that science and technology are productive forces is not sufficient" and represents a leftist error again; for scientists to be part of the productive forces their activities must be integrated with economic development "in both topics and systems of research." The main obstacle to implementing this change—the "correct policy of the Central Committee and the State Council"—is the "two strips of skin" that now exist between science and technology and the economy.

In this article, as in all others dealing with these issues, the brunt of the attack is reserved for "big science," which is limited essentially to work performed at the Chinese Academy of Sciences. Presumably, most of the leadership does not subscribe to the view held by some, that basic research is equivalent to "throwing money into the pond without even producing bubbles," but there is nevertheless a strong feeling that it does "devour" limited scientific and technical personnel who should be participating in applied research. The main goal of the higher scientific community is to "blindly catch up and overtake world science," without paying any attention to the national conditions. Proponents of "big science" believe that China must have something that foreign countries have as well as things they do not have—a notion that is completely unrealistic given China's economic abilities. The authors point out that there are too many fields in science for any one country to be the leader in all of them. To make matters worse, the primary concern of scientific research has been the production of academic reports without any concern for scientific research or economic effects. Scientists are impatient for success and use little judgment in selecting subjects for research—blindly launching research which sometimes must be suspended because of shortages of manpower, financing, and materials.

The article maintains that there is a similar lack of orderly planning by scientists working in applied research. Products are developed without anyone bothering to conduct market surveys and without any effort to popularize the results of the research. Consequently, for long periods many products are found only as "samples, exhibits, and gifts" and are rarely even actually produced. On the average, only about 10 percent of China's research can be promptly applied to production, as opposed to 80 to 85 percent in the United States. At all levels of research there is serious duplication and waste. According to some

estimates, about 40 percent of the research subjects undertaken in China duplicate foreign research which has already produced results; the degree of duplication within the country is even higher. One of the examples given is that "no less than 980 units in China are developing haploid seed breeding." Another is that, despite a shortage of manpower and money, 28 of 63 projects introduced in 1978 and 1979 in Shanghai's scientific and higher educational institutions were duplicating each other and 24 of them duplicated projects which were introduced in 1973 and 1974.

The proliferation of research at the national level is mirrored at the local levels. The authors suggest that the 1978 National Science Congress did too good a job of promoting science and technology, causing the phenomenon of "all levels building research centers and flowers of science blooming everywhere." The striking example of this proliferation is the fact that China's 2000 farm machinery research centers employ only 20,000 researchers. This situation is delightfully described by the authors: "Some research centers are dubbed 'three no' centers (no research subjects, no funds, and no personnel), some are known as 'three diminutive' centers (one room, one seal, one empty shelf), while others are styled 'three machine' centers (one mimeograph, one stapler, and one telephone)."

The article ends by emphasizing once again that "the gravest consequences" stem from the fact that so much of scientific research has been incompatible with national economic development. Concern with "world science" is simply out of step with the level of China's development and the needs of her economy. Science cannot develop without a strong economy any more than the economy can grow without an important input from science; it is therefore vital that economic and scientific planning be synchronized.

Attitudes of Scientists

Now let us consider these serious accusations, which tend to cut across the whole spectrum of China's scientific establishment, in the context of the postulation that scientists at the Chinese Academy of Sciences have reverted to strong elitist tendencies. Just how receptive will these scientists be to any suggestion that they cut back on some of their more esoteric research and become more intimately involved with the more mundane problems encountered in the development of China's economy?

There is little doubt that many scientists will be resistant to the new scientific direction, but the resistance will be uneven, depending on the various research sectors. The implementation of the current policy should be easier within the several thousand research institutes falling under the production ministries, because most of these institutes already have direct links with factories and other enterprises under the jurisdiction of a particular ministry. Similarly, although there may be institutional differences, changes should not be terribly traumatic for the scientists at the Academy of Agricultural Sciences or the Academy of Medical Sciences, because it is in the nature of their sciences to be more cognizant of the practical problems encountered in the field. The most severe test for Beijing will be to turn around the much more elitist and isolated scientists at the Chinese Academy of Sciences.

It must be remembered that the policies and research projects in science and technology, which are now criticized, were not drafted by the State Council or the People's Congress. They were drawn up in 1977 and 1978 by some of China's foremost scientists—a large proportion of them foreign-trained. And it should be remembered that in those years China was expecting oil to supply the revenue for all of the country's necessities and extravagances. Who could possibly question the scientists' recommendations and priorities, especially at a time when the nation was still making amends to them for the Cultural Revolution. Looking at the 8-year plan for development of science and technology, one could easily gain the impression that each long-frustrated scientist managed to slip in his own pet project in his own special field of interest. Furthermore, they were supported in many segments of the scientific plan by foreign scientists (most notably Americans of Chinese descent), who frequently visited the country and whose advice was intensely sought. Foreign scientists, preoccupied as they are with their science, could not be expected to concern themselves with China's economic realities. They brought with them the values of advanced foreign science: scientists must be free to pursue their interests and, if China is to modernize science, there must be basic research.

Even as China was announcing its projects at the National Science Conference in 1978, there were those outside the country (including some scientists) who were questioning both the value of many segments of the program and China's capabilities for achieving them. Is China's space research, for example, a reflection more of chauvinism than of need? Does China really need a high-energy accelerator, or does such a priority reflect the disproportionately large number of influential high-energy physicists in China? Should China be concerned about making "discoveries and creations in new types of laser devices"? Should China spend resources on "basic studies in genetic engineering"? How quickly can Chinese scientists, isolated from Western science for so many years, catch up with existing knowledge to upgrade their own competence and to avoid duplicative research? Can a younger generation of top scientists be trained in time to assure continuity in the years to come? Scientists make a strong case that fundamental understanding is a prerequisite to technological development and that many practical benefits come from research projects which, initially, had only intrinsic intellectual value, that without basic research it is impossible to attack practical problems creatively. But while U.S. scientists face the constant challenge of convincing the federal government (which now provides about one-half of the R & D budget) of this fact, Chinese scientists were much more successful in overcoming whatever resistance their own leadership may have offered.

Economists and other specialists experienced in the problems of Third World nations (and to what world China belongs is a moot point) would tend to agree with the more modest goals currently encouraged in China. Most would say that a nation with limited resources would be better off borrowing the existing scientific and technical knowledge from the highly developed nations and adapting it to their own needs. They would be sympathetic with Beijing's present sentiment that in science, "We should not try to do everything from scratch nor attempt to invent everything ourselves" (*7*).

The retreat which is being imposed on the scientists of the Academy of Sciences will undoubtedly encounter pockets of resistance. It will be difficult to abandon some of the ongoing research and the scientists still have enough clout to argue that their particular project does, in fact, have potential economic value. For example, one scientist reporting on the work of the physics and mathematics departments to the academy's Scientific Council insisted that "the policy of neglecting basic research work is a shortsighted one." He yielded that "it is unrealistic to carry out basic research

work in all fields on a large scale," but then went on to argue that "major support" be given to research which is apparently of special interest to him (*8*).

Even more important is the possible effect of the retrenchment on China's international relations in science. Only in the past few years have Chinese scientists begun to participate in international conferences and, in a variety of ways, to reestablish and create new contacts with scientific colleagues around the world. The Academy of Sciences has already sent hundreds of middle- and upper-level scientists to the United States for additional training, and upon return they quickly gain very special status. Hundreds of Chinese scientists must be involved just in the scientific protocols and agreements included in the umbrella agreement signed in 1979 by the United States and China to cooperate in science and technology (*9*). Will scientists involved in these and similar bilateral exchange programs be allowed to pursue their work without interference? Whatever the answer, it is likely to affect relations either with the international scientific community, or with their own colleagues who have had to reorient their research.

Policy-makers may insist, as they do, that "it is necessary to integrate scientific research with production," but it is difficult to picture scientists from the academy becoming intimately involved in discussions about technical and economic advantages and disadvantages with managers and technical personnel of production enterprises. And although some spokesmen can insist that "scientists and intellectuals in our country were never before so warmly welcomed by the peasants," the idea of academicians volunteering to spend any significant amount of time in the countryside stretches one's imagination.

For that matter, it is only fair to point out that the problem of inducing scientists to contribute to production problems is not entirely one-sided. There are many complaints about the reluctance of plant managers and brigade leaders to receive advice from "intellectuals," no matter what their actual competence. Because of this "remnant poison," opinions of specialists are frequently resented and ignored (*10*). An explanation of this attitude may well be reflected in the following complaint: "At present our comrades who are engaged in scientific and technical work do not understand economic conditions very well and will find it difficult to consider in-depth economic benefits, shortcomings, gains and losses" (*11*). In other words, the new chairman of the Communist Party, Hu Yaobang—who is not known, incidentally, for his benevolence toward the scientists—may urge them to "thoroughly examine production practices to find needs to meet" (*12*), but persons charged with running profitable enterprises tend to resent such interference by anyone who is inexperienced in problems of production.

One final point. Just a glance at the list of almost 120 research institutes under the Chinese Academy of Sciences would support the contention that there has been a great propensity on the part of the scientific community to create narrowly focused institutes to solve specific problems. The initial reaction might be that such a system would indeed assure problem-oriented research by scientists. In fact, while this benefits just a few fields, it benefits all the concerned scientists. Not only does an independent institute automatically provide budget and resource allocations for specialized research, but it creates a new administrative hierarchy with direct access to the leadership in the academy. At the same time, such institutional specialization accentuates the already acute and recognized lack of interaction between scientists, which adversely affects their effectiveness. There is a new movement, however, that could alleviate some of these problems. If successful, current efforts to incorporate some serious research into the university system could have far-reaching implications, not only in increasing communication between scientists in different disciplines but also in the general decentralization of knowledge—which should facilitate greater interaction between science and the economy.

Who Controls Science?

In conclusion, it is necessary to face a seeming contradiction that exists between this speculative discussion of some of the adversities facing Chinese scientists and the most recent science conference, which has prompted many—with some justification—to observe that the position of scientists has actually improved.

In May 1981 the 400 members of the Scientific Council of the Chinese Academy of Sciences convened for 10 days in Beijing, the first such session in 21 years (*13*). Probably the most important science meeting since the 1978 National Science Conference, it was addressed by China's top political leaders and many of China's prominent scientists. A few of its accomplishments are of particular significance in the context of this discussion. Fang Yi, who was appointed president of the Chinese Academy of Sciences in 1979 and guided it through the transition, resigned his position, and Lu Jiaxi, a distinguished physical chemist, was elected by the Presidium of the Scientific Council to take his place. At the same time, the new constitution provides that the Scientific Council will be the "supreme decision-making organ of the Chinese Academy of Sciences." Consequently, at least on the face of it, the conclusion expressed by the new president of the academy on the eve of the 60th anniversary of the founding of the Chinese Communist Party seems perfectly understandable. He said that the party's decision to put scientists instead of party administrators in charge of science shows the trust the party places in scientists, that "now the role of Chinese scientists is more fully appreciated" (*14*). While the full meaning of all the changes and proposals made at the Scientific Council meeting remains unclear, there are indications that some of the gains may be illusionary.

First of all, the 400-member Scientific Council is, of course, too large to be a "supreme decision-making organ," and the academy is actually governed by the much smaller Presidium. It is significant that one-third of the membership of this commanding body does not come from the Scientific Council, but is composed of "leading members of the departments concerned under the State Council and leading members of the Chinese Communist Party organization in the academy" (*15*). Not exactly a vote of confidence for the scientists. The leadership role of the party was stressed by Zhou Peiyuan, the vice president of the Academy of Sciences, at the July meeting of the sixth plenary session of the Chinese Communist Party. He said that historical evidence has proved that science alone cannot save China, that without the Communist Party there can be no China, and that all scientists must follow the party (*16*).

Even more important in terms of control over the academy is the position of Lu Jiaxi, its new president. Both he and Fang Yi come from Fujian Province, and it seems safe to presume that Lu was not "elected through a democratic process," as claimed, but was handpicked for the job. In China this represents an extremely important relationship and ensures that as head of the Scientific and Technological Commission—which is, in fact, the supreme policy-making body in science—Fang Yi will continue to be the

behind-the-scenes interpreter of the academy's mission and activities.

Also, in the 10 days of speechmaking, there was a key sentence buried in the report by Fang Yi, lamenting the "over-concentration of power in the academy" (*17*). Such a statement is not made casually and, despite the lavish praise he heaped on the scientists, it may be assumed that the academy lost something in the course of the reorganization. It would appear that by stressing the academy's long-range tasks, primarily "in pure science and other fields of technical science," and contrasting these with the immediate and short-term scientific research in industrial departments and local scientific research institutions, Fang Yi seemed to circumscribe the academy's control over scientific activities outside its own institutes.

Given the extreme policy fluctuations, we are inclined to forget that most Chinese are realistic most of the time. Scientists may be elitist and they may have (to their own detriment) oversold their case in 1977 and 1978; at the same time it is only fair to assume that in most instances their motives were good and they sincerely believed that strong and internationally competitive science was synonymous with a strong China. While China's national interests dictate that emphasis in science be redirected toward the economy, China also is chauvinistic—she has many world-level scientists and will not deny them the opportunity to do basic research in those areas of science where there is real promise of achievement. The leaders may even adjust to the inevitability of elitism among the scientists. After all, what an individual is is not determined either by "class nature," as the Communists would have us believe, or by "human nature," as we are apt to assume, but by a combination of both. Although they may not admit it, the policy-makers must know that conversion of an elitist scientist to a proletarian scientist runs counter to both "natures." The Chinese say that "You don't cut off the feet to make the shoes fit." At this stage, Beijing is only binding the scientists' feet to force them into the tight shoes of economic readjustment.

References and Notes

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2. H. W. Bode, in "Basic research and national goals," National Academy of Sciences report to the Committee on Science and Astronautics, U.S. House of Representatives (March 1965), p. 76.
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8. Xinhua [New China News Agency] (15 May 1981), in *Foreign Broadcast Inf. Serv.* (20 May 1981).
9. An excellent review and evaluation of the U.S.-P.R.C. science protocols is given by R. P. Suttmeier, "U.S.-P.R.C. scientific cooperation: An assessment of the first two years," report prepared for the Department of State (June 1981).
10. See, for example, *Jingji Yanjiu* [*Economic Research*], No. 1 (February 1981), in *Foreign Broadcast Inf. Serv.* (17 March 1981).
11. *Jingji Yanjiu* [*Economic Research*], No. 11 (20 November 1981), in *U.S. Joint Publ. Res. Serv. Publ. 77,285* (30 January 1981).
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13. For a detailed account of this meeting, see H. S. Klein, *China Exchange News* (September 1981), pp. 1–5.
14. *China Daily* (28 June 1981).
15. *Beijing Review*, No. 22 (1 June 1981).
16. *Kuangming Ribao* [*Kuangming Daily*] (14 July 1981).
17. *Ibid.* (27 May 1981).

18. I thank L. Bruno, A. DeAngeles, T. Fingar, H. Klein, P. Perrolle, and Chi Wang for reading and commenting on this article.