Perspective

PRC Science Students and Scholars Abroad

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"WE MUST BE SOMBERLY AWARE THAT WE STILL FACE A great many problems and difficulties, many more than we anticipated" (*1*). This sober assessment of the People's Republic of China (PRC) came not from a critic or a dissident but from no less an authority than the Communist party's new general secretary, Zhao Ziyang. Speaking at the opening session of the party's 13th Congress on 25 October 1987 in Beijing, he highlighted the country's achievements but also stressed the need to cope with the unanticipated problems that have been spawned by the recent reforms.

Concerns about the consequences of reform are now as much a part of the political landscape in China as the reforms themselves. No small part of the tension stems from the attempt to maintain tight control over individuals and institutions at home while opening the country to many forms of foreign relations, which include sending the best and the brightest students and scholars abroad. It is this effort to send people abroad, particularly scientists and engineers (S&Es), who make up the majority of Chinese in academia abroad, that has begun to present unforeseen difficulties for the reform movement.

Chinese government officials, academics, and educational authorities believe that a rapidly increasing number of S&Es are failing to return from foreign countries, particularly from the United States. Described by one Chinese scientist as "the most troublesome" dilemma facing the scientific community, the problem has several parts. First, it is one of perception: until better figures are available and the plans of the current crop of Ph.D. students scheduled to receive their degrees in 1988 are known, little can be said definitively about the percentage remaining abroad permanently. Until the student demonstrations occurred in China in December 1986, virtually all of the officially sponsored Chinese scholars and students studying abroad returned to the PRC (*2*). However, the perception that most students currently studying abroad will not return is being treated as a reality.

The vice chairman of the PRC's State Education Commission, He Dongchang, met with officials from the U.S. Information Agency (USIA) in June 1987. Their joint statement announced that China would increasingly concentrate on sending senior scholars, not students, abroad and that "unequivocal stipulations concerning the fields and length of study of all sponsored students and scholars" would go into effect immediately (*3*).

Second, because the government did not anticipate that S&Es might not return, there is no overall agreement about what constitutes acceptable or expected behavior. For example, should everyone be expected to return? Or should a certain percentage be allowed to remain abroad temporarily or permanently? Should there be differences for different fields? If there are no jobs available in China in a given field, should those scientists be encouraged to stay where there are employment opportunities? In the long run, might China benefit from a visible, talented group of S&Es who remain abroad?

All of these questions have created unexpected turbulence for the Chinese scientific community. When the Open Door reforms were instituted in 1979, little thought was given to whether the scientific elite would return. The government assumed that they would, and at first they did. However, those who went abroad in the early 1980s were on the average older, had left their families in China, and went for short visits.

In addition, after the ravages of the Cultural Revolution from 1966 to 1976, the possibilities for building a new scientific establishment were intoxicating. Science and technology had been elevated to the top role in helping the country achieve large-scale economic development, national security, and social and political well-being. They would serve as the underpinnings for much-needed agricultural and industrial innovation, and in large measure they have delivered. The government has maintained its commitment to basic science, although this commitment is diminishing as applied science is being glorified in the country's rush to modernization.

The Open Door policy has catapulted China into complex arrangements in foreign relations. Scientific and technical cooperative agreements have been negotiated with 106 countries, and various groups have become members of 250 international science and technology organizations. To date, the United States is China's largest partner in science and technology activities, with more than 500 official cooperative projects undertaken during the past 7 years (*4*).

This success has helped change the attitudes and behavior of younger S&Es. Although vigorously defended as socialism, the new system has many of the hallmarks of capitalism. Entrepreneurship is valued not only for business but for science; once disdained by intellectuals, the entrepreneur has become the new hero. The rewards are greatest for those who can commercialize their research or bring in the largest grants and contracts from nongovernment sources. Consequently, basic scientists in particular are anxious about what will happen in their fields. In this new environment, young S&Es have become preoccupied with their own career development, and less concerned with whether they are contributing to national goals.

At the same time, the government and academia are painfully aware that the basic obstacle to carrying out planned reforms is a lack of trained manpower. Accordingly, whether S&Es return to China after obtaining the training abroad that is not available at home becomes an issue of overriding importance.

During the month before the party congress, I talked to S&Es, government officials, policy analysts, academic administrators, and students in four major cities—Beijing, Xian, Chengdu, and Shanghai. At each session, I presented the findings from my current research on policies governing the education of foreign S&Es internationally (*5*). I also spoke with groups of S&Es who had been abroad about the significance of this experience for their professional lives, as well as their assessment of current government policy regarding overseas study.

In each city the pattern of response was consistent. Government officials spoke with one voice, "They have a responsibility to return." However, the academic community was deeply divided; their positions ranged from those who agreed with the government to those who believed that there should be no restrictions on staying abroad or even emigrating permanently. (Several scientists mentioned that colleagues who had not been abroad often resented the heightened status and advanced knowledge of those who had been abroad and, consequently, were not eager for them to return.) The young scholars were also consistent in their response—they are

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clamoring to go abroad, particularly to the United States.

Many of the S&Es asked questions such as, "Is it true that the United States is discriminating against Chinese? [We have heard that] they are being denied admission to universities. They cannot get into scientific meetings, and they cannot use Cray computers at universities." At two different research institutes I was asked, "Is it true that the United States developed the AIDS virus as a form of bacteriological warfare?" Despite these and other critical observations, I was surrounded by enthusiastic people, often the very ones who had lobbed the difficult questions, eager to gain admission to the United States. Young S&Es told me that they had received government permission to go to Canada, Great Britain, and West Germany where strict immigration policies virtually assured that they would have to leave the countries at the end of their studies, but they could not receive financial support to go to the United States. However, they had heard from colleagues that once one was abroad, it was not difficult to get to the United States.

Between 1979 and 1986, the U.S. Department of State issued approximately 50,000 visas to Chinese scholars and students, almost two-thirds of whom were sponsored by the PRC government. The government-sponsored group was issued J-1 visas that carry stringent requirements about returning home after the stipulated period of time has expired. The other visa category, F-1, applies to privately sponsored visits and makes it easier to allow for adjustment to the status of permanent resident. There is no certainty in China about the numbers of students who have gone abroad, but the government estimates that there are currently 20,000 (perhaps 25,000) PRC students and scholars in the United States (out of a total of 32,000 abroad), the majority of whom are S&Es. Of the 20,000, the government has sponsored 12,000 and the rest are privately funded (*2*).

When asked about the options on returning home that S&Es abroad should have, Chinese respondents often cite the different opinions held by two Chinese-born, American Nobel Prize–winning physicists, Professors C.-N. Yang of the State University of New York at Stony Brook and T.-D. Lee of Columbia University.

Professor Yang, according to policy analysts in the National Research Center for Science and Technology for Development (Beijing), says that the "brain drain" problem has occurred in many countries in the last 40 years and he advises that China should not be overly worried about it. He believes emphasis should instead be on using scientists to stimulate economic development. Beginning in 1979, most of the students who were sent abroad were working in the basic sciences, and there are as yet few research facilities in China for them. Bringing all of them back would be even more of a waste than losing them to another country. If some return and others are encouraged to visit regularly to teach for short periods, the country would be better served. Professor Yang is quoted as citing Taiwan as a valuable example. Their first wave of basic scientists remained in the United States. It was the second wave, economists and engineers, that made the difference. Their success in building up Taiwan is making it possible to attract many of the first wave home some decades later.

Professor Lee sponsored the first program to bring Chinese physics students to study for their Ph.D.'s in the United States [China–U.S. Physics Examination and Application program (CUSPEA)]. To date there are nearly 900 CUSPEA students trained or being trained in all branches of basic and applied physics. Lee believes China cannot implement her modernization plan without a core group of first-rate young scientists. To this end, he is responsible for the suggestion that led the Chinese government to establish research centers with "sound working conditions" in 20 cities to make returning home a more attractive option (*6*).

Salaries for full professors in China continue to be approximately $500 per year, and funding for science is becoming increasingly competitive—not ideal conditions for recruiting well-trained scientists. However, the Chinese government has begun to take drastic action to ensure that students and scholars return home. Estimates of the number of nonreturnees vary. According to some rumors in Beijing, virtually no one will return from the privately sponsored groups and substantial numbers from government-sponsored groups will also remain abroad. A more factual report from the official agency of the government, the State Education Commission (*7*), states that 40 percent of those paying their own way to the United States have acquired resident status, along with several hundred of those sponsored by the government. Others argue that less than half of the 40,000 students sponsored by the government since 1978 have returned. China watchers in the United States report that in 1986 only 825 or 4 percent of the total group became permanent residents, but if they are the very best, the loss over a decade would indeed be significant (*2*). Whatever the exact figures, the Chinese government has responded as if the country is beginning to sustain a serious brain drain and an enormous political embarrassment.

The majority of Chinese I met believed that the most important policy for China's future lay in keeping the "Open Door" wide open. The president of Fudan University in Shanghai, Dr. Xie Xide, is a nuclear physicist who was trained at Massachusetts Institute of Technology. An advocate of bringing government-sponsored S&Es home, she stated unequivocally, "I don't care if we lose the best ones. We should not return to the 'Closed Door.' "

The final meeting of the party's 13th Congress signaled a victory for the proponents of economic reform and the Open Door policy. Dr. Xie Xide was elevated to membership in the Central Committee. These changes suggest that the Chinese government may have to reevaluate the implications for China's future if new, stringent limitations are placed on the free movement of their S&Es. The policies will have great significance for U.S.–China relations as well as for China's relations with other countries. If the Chinese believe that industrialized nations are robbing them of their best talent, much of the promising cooperation in science and technology would be diminished, and all countries would be the losers.

The U.S. government is committed to helping the PRC ensure the return of its S&E scholars, and U.S. universities and industry are committed to searching out the most talented professionals. The ascendance of the pro–Open Door faction in the PRC's Communist party increases the likelihood that open discussions will supplant public relations, and that the national needs of each country will be resolved without sacrificing either the scientific potential of the gifted young students or the mutually beneficial arrangements between the United States and China that have prevailed since 1979.

REFERENCES AND NOTES

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