



China in Asia Seminar Series

Seminar 3: Will Technology Be a Source of Chinese Influence in Asia?

May 13, 2005

CORE GROUP SUMMARY

The discussion started off with a question from a China expert: to what extent are current or potential technological spillovers taking place as a result of manufacturing and research and development conducted in China by Korean, Taiwanese, Japanese and U.S. firms? According to a Japan expert, the Japanese are concerned about and protective of technology they transfer to China. However, a technology expert indicated that it is difficult for us to know what is and is not being transferred due to insufficient data. Countries like Taiwan may be reluctant to transfer technology-intensive work to China but are left with little economic choice but to do so.

This initial discussion raised two points. First, the Chinese are indeed advancing in technology, but they may not be doing it particularly well. They have one or two high-impact projects, but across the field their technology is still fairly limited. Much of their new technology is created using computer technology dating from the 1970s and 1980s. Second, an economist highlighted the need to define what we mean by “technology transfer.” There are big differences between selling technical information for unrestricted use and technology that is embodied in sophisticated production equipment in high-technology factories, which may not actually be “transferred” even if the factory is on Chinese soil. A political economist added that the two “highest” forms of technology transfer involve systems integration and people-to-people instruction and learning.

An Asian specialist asked, if the Chinese are in Phase Two (creative imitation), what would it take for them to shift into Phase Three (innovation)? We heard several possible answers. One would be for China to achieve the American model of technology transfer through people-to-people networks or systems integration. If that is what is required, then perhaps Americans should not be so concerned about how much technology American companies transfer because the Chinese may still not be able to put systems together as well as Americans do. An economist mentioned that China and India often need to send persons to the United States to gain experience in order to launch and manage successful projects. A China specialist argued that China does understand the need for people-to-people innovation and has instituted a U.S.-style military education system in order to bridge the gap.

A China expert asked if China needs to make a leap to innovation before it can pose problems for America’s commercial competitiveness and military lead. The answer was a chorus of “noes.” Strategists argued that the issue is not technological innovation but organizational innovation—the ability to manage projects effectively. One discussant pointed to the Japanese model, which is not one of great innovation, but of excellence in quality control and project management.

An expert on Chinese military affairs argued that the Chinese are placing greater emphasis on project management. They are changing their institutions and incentives in order to improve

R&D, management, production capabilities, and quality control. However, these changes have mainly taken place on the enterprise level with little noticeable change in Chinese military innovation, although dual-use sectors such as aerospace and shipbuilding have done very well. There is no question that there have been some steps toward innovation, but the Chinese military is more concerned with achieving a particular goal such as building an advanced destroyer than with real innovation.

A China specialist raised the issue of aircraft co-production in China, noting that the Chinese factory and workers involved in the joint venture had learned the importance of quality control processes well enough that tail sections built at the Chinese factory were eventually used in all production of that model. A security expert noted that although the Chinese may have learned quality control in that instance, they did not create a persistent culture of quality control and the lessons learned did not cross over to other factories or industries. Another expert indicated that the transfer of technology from the military to the civilian side sometimes resulted in disruptions of design and human resource transfers.

Disagreeing with these judgments, a labor expert argued that there is no reason that China cannot learn innovation and project management over time. Of greater concern is what this expert described as the U.S. government's "naïveté" in the face of China's rising capabilities. U.S. officials often say that China cannot catch up, but China is already doing so in some areas. Regardless of whether or not the Chinese violate WTO rules, they are making strides. In response, a political economist underscored the legal and competitive difficulties of trying to force American companies to restrict technology transfer for commercial reasons.

Several members pointed out the complexities and contradictions in China's progress toward innovation. On the one hand, Chinese students studying abroad have been returning to China in greater numbers ever since the mid-1990s. China has large numbers of engineers and foreign direct investment (FDI) is rapidly increasing. In fact, the Chinese have avoided the Korean and Japanese models; instead, they have been relying on FDI rather than domestic protectionism. They have also avoided the Brazilian model of offering protection to foreign investors in return for FDI. On the other hand, there is still massive unemployment and underemployment in China. Innovation and efficient capital allocation require a robust and efficient financial system, something that is still missing in China.

Returning to the question of the degree of innovation and integration between civilian and military sectors, an economist asked, what has China done to reduce barriers between them? In the 1980s there were very tight restrictions, but the more interesting question is, how and to what extent will China allow companies that produce for the commercial sector to take part in China's military modernization? There are a lot of impediments involving law, standardization and secrecy, but the Chinese are studying how to remove these barriers. Indeed, China's most recent defense white paper emphasized the need for more civilian technology to be transferred to the defense industry. Among defense enterprises the degree to which there is a significant "spin-on"/"spin-off" between commercial and military technology differs from sector to sector, but there is a high degree of such transfers in the shipbuilding and aviation industries.