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China's Post-WTO Technology Policy: Standards, Software, and the Changing Nature of Techno-Nationalism

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CHINA'S POST-WTO TECHNOLOGY POLICY:
STANDARDS, SOFTWARE, AND
THE CHANGING NATURE OF
TECHNO-NATIONALISM

Richard P. Suttmeier and Yao Xiangkui

*“Sanliu de qiye zuo chanpin; erliu de qiye zuo jishu;
yiliu de qiye zuo biao zhun”*

(Third-class companies make products; second-class companies develop
technology; first-class companies set standards)¹

“Are the new standards ‘superior or just gratuitously different?’ asked a
Western consultant in Beijing.... ‘Is this protectionism by another name?’”²

“China Trademarks Astronaut”³

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¹ This is a popular saying in contemporary Chinese business and government circles, thought to have originated with Sony. We are grateful to Peng Yali for calling this to our attention.

² Kathy Chen, “China Sets Own Wireless Encryption Standard,” *Wall Street Journal*, December 3, 2003, p. B4.

³ Recent headline, *BBC News*, December 9, 2003, <<http://news.bbc.co.uk/1/hi/world/asia-pacific/3303121.stm>>.

Over the past few years, there has been growing interest among Chinese technology policy leaders in promoting China's own technical standards, broadly understood, and in establishing property rights over Chinese technical achievements. While establishing a trademark for Colonel Yang Liwei and his Shenzhou space mission may not be a technology policy tool that will travel far, it is symptomatic of a new stance in post-WTO China towards capturing value from indigenous innovation through a more aggressive approach to the management of intellectual property, and especially toward the establishment of indigenous standards which reflect accumulated technological capabilities.⁴

In addition to the attention given to such relatively prominent standards-related cases as third-generation (3G) mobile telephony and the TD-SCDMA (Time Division Synchronous Code Division Multiple Access) standard and efforts to develop an alternative to the Windows operating system standard (through the promotion of Linux systems), there are Chinese efforts to develop standards in other areas, including:

- its own microprocessor (the “Dragon Chip”);
- its own successor to DVD's, the “EVD” (Enhanced Versatile Disc) standard;
- a new digital audio standard (AVS—Audio, Video Coding Standard) for MPEG (Moving Picture Experts Group);
- a Chinese-developed standard, IGRS (Intelligent Grouping and Resources Sharing) for communicating among digital devices;
- a new Internet protocol (IPV6); and
- radio frequency identification tagging (RFID).

Of particular recent interest, the introduction of a new security standard for wireless devices, the WLAN Authentication and Privacy Infrastructure (WAPI) standard, has received international attention, and as further discussed below, became a major issue in U.S.-China trade relations. Standards issues have also become prominent in areas ranging from agricultural trade

⁴ As used here, “standard” refers both to the products of formal standard-setting activities (the “standards” and “technical requirements” which are produced by government standards organizations, by international organizations such as the ISO, IEC, and ITU, or by industrial or professional associations) and to the outcome of market exchanges in which certain technologies, protocols, etc. come to be accepted as the de facto standards of an industry.

(genetically modified organisms and the safety of aquatic products) to the introduction of new products to promote the efficient use of water.⁵

Chinese decision makers have turned their attention to standards as part of a strategy for meeting new competitive challenges and obligations resulting from China's accession to the WTO. Representatives from the international business community and officials of foreign governments have followed Chinese approaches to standardization with a growing interest since these not only affect business decisions, but also raise questions about the use of a policy tool to unfairly enhance the competitiveness of Chinese industry in ways which would be inconsistent with the spirit, if not the letter, of China's WTO commitments.⁶

Technical standards, in short, are becoming important issues affecting trade and investment relations with China and are seen by many foreign observers as the latest manifestation of a troubling Chinese techno-nationalism, i.e., a commitment to use political means to secure technological progress in the interests of national defense and economic advantage for Chinese industry. This paper explores the logic of a standards-based technology policy and assesses the possibilities for conflict and cooperation arising out of such a policy. It begins with the assumption that China's new interest in standards is driven by a complex set of issues growing out of the successes and failures associated with technology policies of the past.

Market Power, Technological Capacity, or National Security?

In the first instance, the new emphasis on standards by the government may be a response to a strong resistance to standardization in Chinese society, one which has worked against Chinese interests in the past. One thinks, for instance, of Chinese interests in acquiring modern telecommunications technologies in the 1980s and early 1990s, and the incompatibilities which resulted from multiple parties pursuing multiple interests in different telecom systems in different parts of the country.⁷ Strong traditions of localism at both provincial

⁵ Lester Ross, "Regulatory Foundations for Chinese Technological Development: Legal, Financial, Standardization, and Environmental," paper presented at the Conference on China's Emerging Technological Trajectory in the Twenty-first Century, Rensselaerville, New York, September 2-7, 2003.

⁶ See, for instance, United States Trade Representative, *2003 Report to Congress on China's WTO Compliance*, <www.ustr.gov>.

⁷ Professor Erik Baark of the Hong Kong University of Science and Technology in email comments on an earlier draft of this report, December 2003.

and sub-provincial levels, and indeed a tough individualism among Chinese, point to cultural traits supporting resistance to standardization, as do difficulties in realizing consistent local implementation of national intent in a variety of policy areas. A strengthening of a national standards philosophy, with strong central leadership, may thus be a part of a national policy response to address what some might take to be domestic weaknesses impeding the standardization imperatives of modernity.

The new interest in standards also grows out of the curiously ambiguous position of China in the international economy and the ways in which its technological levels affect that position. On one hand, the Chinese economy has grown and benefited significantly as a result of its participation in the international production networks associated with globalization. China has become one of the world's great export economies and has rapidly moved up the value chain in producing and exporting higher value-added products. However, in important respects, it has yet to emerge as a significant force for innovation within production networks and thus continues to be in a subordinate position vis-à-vis global industry leaders. This leads to an interpretation of its approach to standards which focuses on market power in the face of technological weaknesses; China can use the promise of its huge market as an asset in developing distinctive standards with an expectation that its standards policies will be taken seriously by international business organizations in ways that the policies of other countries would not be.⁸

On the other hand, Chinese standards policies also seem to be related to perceptions, both inside and outside of China, of a growing Chinese technological capability, a measure of which is *having confidence in one's ability to set innovative standards* which can positively affect one's international competitiveness. In this interpretation, China shows interest in a standards-based policy because it believes that after 20 years of reforming and nurturing its research and development (R&D) system, *it has the ability to set standards*. Measures of an increasing technological capability include its large contingent of scientists and engineers working in R&D (810,000 in 2002); its expenditure on R&D, which in purchasing power parity (PPP) terms is

⁸ See Daniel H. Rosen, "Low-Tech Bed, High-Tech Dreams," *China Economic Quarterly*, Q4, 2003, pp. 20–40; see also Barry Naughton, "China's Economic Growth and Technology Development: International Linkages and Implications for the U.S.," testimony presented to the U.S.-China Economic and Security Review Commission, February 12, 2003.