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CHINA'S IP TRANSITION

Rethinking Intellectual Property Rights in a Rising China

By Richard P. Suttmeier and Xiangkui Yao

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FOREWORD

Since China acceded to the World Trade Organization in 2001, China's intellectual property rights (IPR) landscape has become an increasingly complex, multifaceted, and contentious environment. With improved legal protections for rights holders and expansions to its anti-counterfeiting campaigns, China has encouraged the rise of new stakeholders who are vocal about protecting their work and contributing to the global discourse on IPR. Yet despite this progress, many observers continue to raise questions about the seriousness—and ultimate direction—of the Chinese government's efforts. Multinational companies have significant concerns regarding the country's commitment to enforcing IPR protections. The release of government procurement catalogues and other government actions based on the nation's policy of indigenous innovation have also heightened foreign anxiety that China plans to develop domestic industries by unfairly protecting the development of homegrown champions and forcing technology transfers that undermine the rights of IP developers. Given the vital importance of these issues both to China's continued development and to the future of the global economy, it is essential that greater attention be paid to parsing the nature of China's evolving IP strategies.

For over fifteen years, the National Bureau of Asian Research (NBR) has been at the forefront of researching and analyzing China's IPR strategies and industrial policies. Building on a comprehensive network of experts, NBR brings together scholars, practitioners, and policymakers from the United States and China to provide insights into the debates surrounding China's modernization efforts, including its technology standards policies, innovation efforts, and IP strategy. Through high-level briefings, conferences, workshops, and reports, NBR aims to inform the development of public policy on these issues in both countries. This report represents our most recent effort to connect interested stakeholders with timely and well-informed analysis.

In this NBR Special Report, Richard P. Suttmeier and Xiangkui Yao offer an assessment of China's evolving IP landscape. Drawing on their significant expertise concerning China's science and technology policies, the authors outline the key factors that shape China's IP policies and examine the relationship between China's IP strategy and indigenous innovation policies. Suttmeier and Yao conclude with an outlook for the future and provide critical recommendations for U.S. policymakers, industry leaders, and other vested stakeholders in China. We are deeply grateful to these authors for their phenomenal contribution in the form of this report to this important debate. Their insights are certain to be vital reading for anyone interested in the state of IPR in China.

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China's IP Transition: Rethinking Intellectual Property Rights in a Rising China

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EXECUTIVE SUMMARY

China's drive to promote indigenous innovation has given intellectual property (IP)—its creation, utilization, management, and protection—a prominent position in the nation's policy agenda.

MAIN ARGUMENT

In conjunction with its ambitious policies to support indigenous innovation, China launched a major IP strategy in 2008 to support the creation, utilization, management, and protection of IP. The implementation of the strategy comes at a time when the population of scientists, engineers, entrepreneurs, designers, and others in the cultural and creative industries who have a stake in a more robust national IP regime is expanding. The experience of other countries would suggest that China is therefore poised to make a transition to a national IP regime that is more in harmony with international norms. Yet the development of the IP system at times fits awkwardly with other indigenous innovation policies. This essay explores the factors shaping the evolution of China's IP regime and argues that, while movement toward greater harmonization with international IP norms is evident, the direction is by no means assured.

POLICY IMPLICATIONS

- More attention should be given to understanding the links between China's R&D system and the evolving IP regime, the development of corporate IP strategies among Chinese firms, the actions of local governments in promoting the IP strategy, the emergence of IP brokers, and the development of specialized markets for IP. This requires not only better eyes and ears on the ground in China, and a greater recognition of China's regional and other differences, but also new forms of cooperation between foreign legal communities and specialists on innovation studies.
- Chinese leaders have recently made a number of commitments to the U.S. and other foreign parties to crack down on piracy and reverse industrial policies that seek to use IP in ways that are outside accepted international norms. Foreign stakeholders should continue to engage China on these issues, drilling further down into how these policies are implemented at national and local levels and pressing for the full implementation of the commitments Beijing has made.
- Engagement with China on its efforts to integrate its IP and innovation strategies should be expanded. The initiation of the "innovation dialogue" within the framework of the Strategic and Economic Dialogue is a useful first step to this end, but the U.S. side should be prepared to commit more staff and analytic resources to this effort in order to engage China from a more informed position.
- A changing IP landscape in China requires that foreign companies rethink their approaches to protecting IP in the country. Many foreign companies have been reluctant to pursue their rights in the Chinese legal setting, but a growing number of IPR specialists now believe that foreign rights holders should register their IP in China and use Chinese IP law more aggressively to protect their interests.

> *By reasonably determining people's rights to certain knowledge and other information, the intellectual property system adjusts the interests among different groups of persons in the process of creating and utilizing knowledge….In the world today, with the development of the knowledge-based economy and economic globalization, intellectual property is becoming increasingly a strategic resource in international development and a core element in international competitiveness, an important force in building an innovative country….Developed countries take innovation as the main impetus driving economic development, and make full use of the intellectual property system to maintain their competitive advantages.*
>
> —"Outline of the National Intellectual Property Strategy," State Council of the People's Republic of China, June 5, 2008, 1.

In 2005, Anne Stevenson-Yang and Ken DeWoskin published a pioneering article entitled "China Destroys the IP Paradigm."[1] In this study, the authors call attention to a growing ferment in China about intellectual property (IP). They point to signs of a new activism as China deepens its appreciation of the relationships between IP and innovation and the importance of intangible assets for the "knowledge economy" that China hopes to claim as its own. But the authors also note that China's aggressive legal and illicit approaches to technology acquisition and poor conditions for genuine innovation, combined with the "China price" of low-cost production, have the effect of destroying the value of IP, not just in China but around the world. China's acquisition of technology through reverse engineering, coerced technology transfer, or outright theft—married with highly efficient, low-cost manufacturing—leads in this view to the ready commodification of innovative products and processes, thus reducing the value of the original IP.[2] The digitalization of IP and the modularity characteristic of international production networks further facilitates this commodification and destruction of value.[3]

As illustrated in this modified version of the "smile curve" (see **Figure 1**) proposed originally by Stan Shih, the founder of Acer, manufacturing has become the least profitable segment of the value chain, with the profitable activities being found in the more IP-intensive upstream and downstream segments. Due to the factors noted above, China's efforts to move up the left and right sections of the curve lead to the reduction in value noted by Stevenson-Yang and DeWoskin.

Following the publication of the Stevenson-Yang and DeWoskin piece, in 2006 the government in Beijing announced the initiation of its fifteen-year Medium- to Long-Term Plan for Scientific and Technological Development (MLP), which, among other things, sets objectives for IP creation and commercialization for the year 2020 in areas such as patents and technical standards. The initiation of the MLP has been followed by the introduction of a large number of implementation policies, many of which have IP provisions. Together these provisions constitute the "indigenous innovation" industrial policies that have so troubled many in the international community. Further emphasis on the importance of IP for the goals of the MLP came with the announcement of the National Intellectual Property Strategy in 2008 (the planning for which began in 2005)

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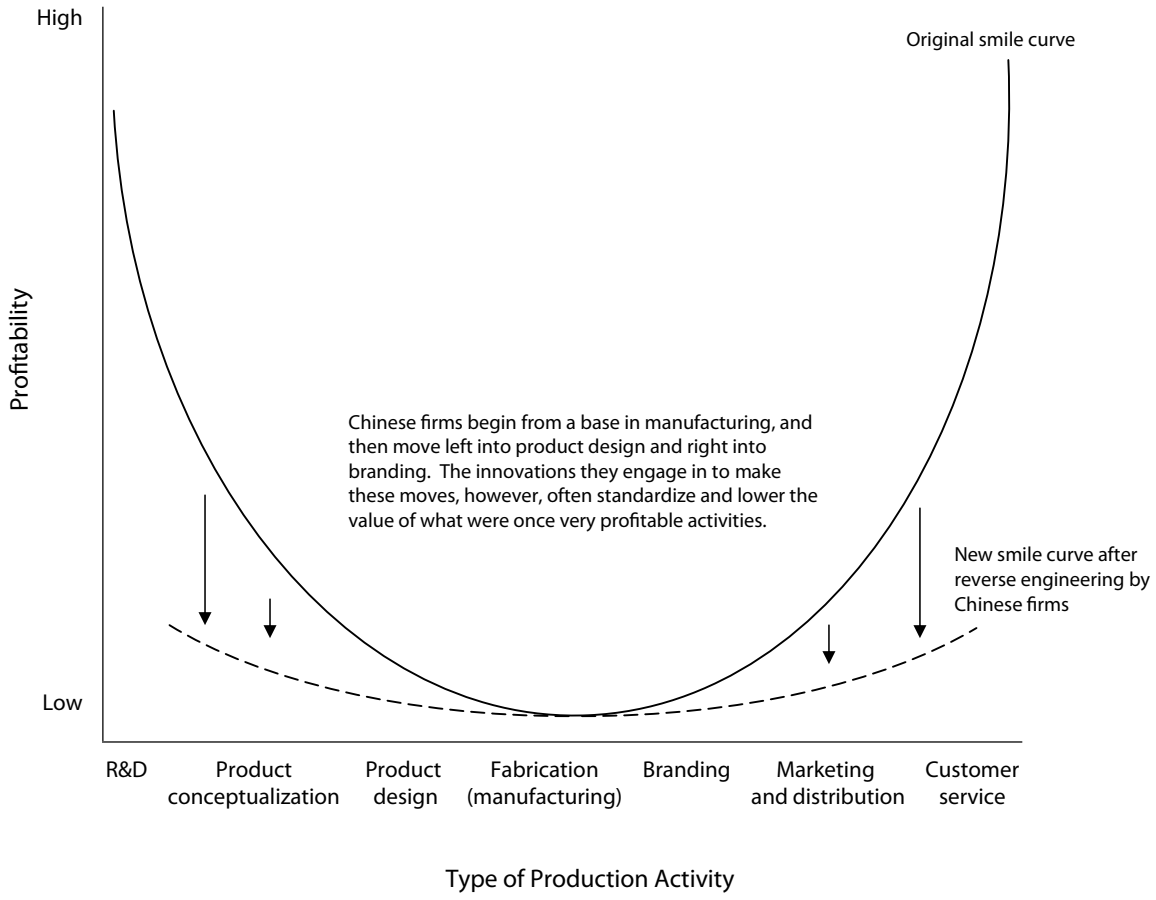
[1] Anne Stevenson-Yang and Ken DeWoskin, "China Destroys the IP Paradigm," *Far Eastern Economic Review* 168, no. 3 (March 2005): 9–18.

[2] The themes of Stevenson-Yang and DeWoskin's article are developed in greater detail and nuance in Chris Cooper, Ken DeWoskin, David Hoffman, and Alan Morrison, "Redefining Intellectual Property Value: The Case of China," Price Waterhouse Coopers, 2005.

[3] Edward S. Steinfeld, *Playing Our Game: Why China's Rise Doesn't Threaten the West* (New York: Oxford University Press, 2010), chap. 4.

FIGURE 1 Upward commodification by Chinese firms



SOURCE Steinfeld, *Playing Our Game,* 106.

and, more recently, the National Patent Development Strategy (2011–20) in November 2010. In a number of ways, these developments affirm the prescience of Stevenson-Yang and DeWoskin in calling attention to the growing importance of IP issues in Chinese public policy, but they also raise new questions about what constitutes the "IP paradigm," as well as whether or not Chinese IP activism is destroying it or, indeed, refashioning the paradigm in an image quite different from one that might have been anticipated only five years ago.

It is appropriate, at the outset, to point out the obvious. Foreign thinking about IP in China has overwhelmingly focused on Chinese violations of what are taken to be international norms of IP protection and enforcement, as well as on China's disappointing record of implementing laws and policies intended to protect and enforce intellectutual property rights (IPR). The attention given to these violations is quite understandable given the fact that Chinese violations of patents, copyrights, trademarks, and other IP rights held by others have led to billions of dollars in lost

revenues for those who have established ownership rights in the international IP regime.[4] This has led foreign governments and companies to exert a great deal of pressure on, and to engage with, China in support of strengthening the country's IP protection regime and, more recently, enforcing its increasingly sophisticated IP laws. While this growing attention to the problems of Chinese IP violations and the challenges of enforcing China's IP laws continues to be a matter of great importance both for the victims of the violations and for China's ambitious economic aspirations more generally, it does not quite get to the nub of Stevenson-Yang and DeWoskin's concerns, and may even obscure other important aspects of China's rapidly changing IP landscape.

That a country that is one of the world's great infringers of IP should embrace and develop an IP strategy is in some ways counterintuitive. This is so not only because of the widespread violation of the IP rights of others but also because of the relatively short duration of China's IP regime and efforts to develop a culture of IP recognition and protection.[5] The Western concept of IP sits very uncomfortably with many the norms of traditional Chinese culture and contradicts the principles defining the ways that inventions and creative works should be recognized and employed under socialism.[6] It is not surprising, therefore, that a culture of IP protection consistent with Western norms did not take deep root when China's current IP regime began to emerge in the 1980s.

Nevertheless, the imperatives of participation in the global capitalist economy and its institutions—beginning in the 1980s but especially after accession to the World Trade Organization (WTO)—pushed China to develop IP laws and institutions. By all accounts, these have marched well ahead of the development of widely accepted social norms in support of IP protection. Thus, international pressure and participation in international IP institutions have been more successful in compelling China to craft laws and institutions that accord with international expectations and considerably less successful in changing societal values vis-à-vis IP. China's well-documented problems of domestic governance—fragmented central government authority and bureaucratic "stovepiping," as well as disjunctions between central government intent and local government implementation, among other problems—have ensured that social values more often than not trump formal objectives, including enforcement of the IP regime. Moreover, the international IP regime itself affords many flexibilities to developing and developed countries in terms of the types of rights to be protected and the manner in which they are protected. The IP landscape is therefore characterized by complex and confusing currents—a variety of significant developments promoting an IP regime consistent with international standards, support for international flexibilities, and persisting problems based on a disregard of the IPR of others.

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[4] For instance, it has been estimated that 79% of the software installed on Chinese computers in 2009, valued at $7.6 billion, was not paid for. A recently released report from the U.S. International Trade Commission (USITC) estimates the losses to the U.S. economy from infringements of all kinds at approximately $48.2 billion in 2009. See Robert W. Holleyman II, testimony before the USITC, Washington, D.C., June 15, 2010; and "China: Effects of Intellectual Property Infringement and Indigenous Innovation Policies on the U.S. Economy," USITC, investigation no. 332-519, publication 4226, May 2011.

[5] Peter K. Yu, "The Sweet-And-Sour Story of Chinese Intellectual Property Rights," in *Technology, Progress and Prosperity: A History of Intellectual Property and Development*, eds. Graham Dutfield and Uma Suthersanen (Palgrave Macmillan, forthcoming), available at http://www.peteryu.com/sweetsour.pdf.

[6] See Michel Oksenberg, Pitman B. Potter, and William B. Abnett, "Advancing Intellectual Property Rights: Information Technologies and the Course of Economic Development in China," *NBR Analysis* 7, no. 4 (November 1996), http://www.nbr.org/publications/issue.aspx?id=89; and William O. Hennessey. "Protection of Intellectual Property in China (30 Years and More): A Personal Reflection," *Houston Law Review* 46, no. 4 (December 2009): 1257–1300.

The IP Transition

The changes we are now witnessing are more understandable when several other factors are considered. Although China agreed to abide by certain international norms of IP protection and enforcement as part of its WTO accession, cultural, legal, and economic factors have impeded robust implementation of those commitments. With rapid economic growth since WTO accession, the capabilities of China's enforcement regime do, at least selectively, show signs of strengthening, as one might predict when comparing China to other countries that have gone through an IP transition. China is clearly engaged in a major effort at technological "catch up" that many other countries have undergone. In this process of transition, attitudes toward, and the practices of, building and maintaining an IP regime go through phases. In the early stages of industrialization, imitation is common and counterfeiting, piracy, and IP infringement are widespread. With success in the early phases of technological development, new capabilities begin to emerge and, with them, a growing awareness that IP protection may be necessary for technological progress to reach the next stage. Domestic innovators become stakeholders in a strengthened IP regime, and governments also come to realize that the enforcement of IPR now serves national interests rather than just the interests of foreign governments and companies. These domestic changes are reinforced by experiences abroad as the country's exports encounter infringement challenges from IPR holders in overseas markets. This combination of overseas challenges in export markets and the growth of domestic stakeholders induces a process of building a national IP regime that gradually incentivizes movement in the direction of harmonization with the norms of the international IPR system.[7] Arguably, the forces unleashed in the IP transition become at least as important in inducing change toward a strong IP regime as attempts to force change through diplomatic pressure or linkage-based diplomacy.[8]

Today's China, while certainly not past the imitation phase, has nevertheless reached the point where many domestic stakeholders—scientists, engineers, entrepreneurs, creative artists, designers, and political leaders—have come to associate a stronger IP regime with their personal and national interests, and where export products that infringe on the IPR of others, or that themselves need protection, will be subject to scrutiny and possible litigation.[9] These developments are reinforced by international linkages to IP institutions and to global innovation networks that valorize IP and privilege IP owners. These trends in the landscape intersect the trajectory of Chinese thinking about the importance of innovation for the country's future, with the result that Beijing has now identified IP as a matter of strategic national importance and is taking the lead in attempting to mesh its IP regime with its ambitious industrial and technology policies in order to push the Chinese economy up the right- and left-handed ranges of the smile curve.

China is thus poised for an IP transition. Yet whether this transition will lead to greater harmonization with international IP norms and practices, toward "destroying the IP regime" as

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[7] For useful discussions of the IPR catch-up relationships, see Hiroyuki Odagiri et al., *Intellectual Property Rights, Development, and Catch-Up* (Oxford: Oxford University Press, 2010). See also Peter K. Yu, "Intellectual Property, Economic Development, and the China Puzzle," in *Intellectual Property, Trade and Development: Strategies to Optimize Economic Development in a TRIPS-Plus Era*, ed. Daniel J. Gervais (Oxford: Oxford University Press, 2007), 173–220.

[8] Jeffrey S. Schroeder, "Right Grantors and Right Seekers: A Theory for Understanding the Comparative Development of Intellectual Property Rights" (PhD diss., Department of Political Science, University of Oregon, 2001).

[9] The experiences of China's two leading telecom equipment manufacturing companies, Huawei and ZTE, nicely illustrate this point. For an account of Huawei, see Lan Xue and Zheng Liang, "Relationships between IPR and Technology Catch-Up: Some Evidence from China," in Odagiri et al., *Intellectual Property Rights*, 350–55. For ZTE, see Jody Lu, "ZTE's Global Patent Development," *China Intellectual Property*, October 1, 2010, http://www.chinaipmagazine.com/en/journal-show.asp?id=650.

Stevenson-Yang and DeWoskin suggest, or to some other departure from the given order remains unclear. An examination of China's policies toward innovation and technological catch-up illustrate the complexities of this question.

Innovation Fever, IP Fever

As noted above, the framework for China's innovation policies is the fifteen-year MLP, which was introduced in 2006 and is intended to make China an innovative nation by the year 2020.[10] The plan should be seen against a long history of concern that China's national weaknesses were a function of an underdeveloped science and technology sector. Post-1949 scientific and technological development programs produced an extensive research establishment but little effective technological innovation—science without innovation. By the late 1990s, China had begun to take the challenges of innovation—as opposed to just scientific and technological development—far more seriously and to appreciate that successful innovation is more than R&D and would require, in particular, a major effort to create a culture of innovation in Chinese enterprises.

The provisions of the MLP thus had years of gestation in which Beijing came to appreciate the systemic nature of innovation and, with it, the need for the integration and coordination of policies and institutions in several fields—finance, law, management, education, and foreign trade and investment, as well as R&D.[11] Among the characteristics of a successful national innovation system, in this new approach, was a growing appreciation for the importance of technical standards and IP development.[12] As metrics of innovation, IP and standards were incorporated as drivers, or enablers, in policies for government procurement, tax incentives, technology transfer arrangements, the anti-monopoly law, changes to the patent law, and approaches to information security—i.e., the range of policies that have so troubled foreign companies and governments.[13]

The MLP has a number of different elements, including a series of quantitative targets for scientific and technological development.[14] A core component of the plan is an R&D program built around sixteen "megaprojects" intended to accelerate the catch-up process by introducing advanced technologies from abroad and developing focused R&D programs to assimilate and improve on these technologies, thereby producing indigenously developed IP and technical standards.[15] China has implemented a series of industrial policies to reinforce the objectives of the

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[10] For a recent discussion, see Micah Springut, Stephen Schlaikjer, and David Chen, "China's Program for Science and Technology Modernization: Implications for American Competitiveness," CENTRA Technologies, prepared for the U.S.-China Economic and Security Review Commission, April 2011, http://www.uscc.gov/researchpapers/2011/USCC_REPORT_China%27s_Program_forScience_and_Technology_Modernization.pdf.

[11] This systemic approach to the integration of diverse policies in support of innovation has been referred to with some disapproval as "a web of industrial policies" by James McGregor in his recent critical assessment of the MLP. See James McGregor, "China's Drive for 'Indigenous Innovation': A Web of Industrial Policies," U.S. Chamber of Commerce, Global Regulatory Cooperation Project, 2010.

[12] On standards, see Scott Kennedy, Richard P. Suttmeier, and Jun Su, "Standards, Stakeholders, and Innovation: China's Evolving Role in the Global Knowledge Economy," National Bureau of Asian Research, Special Report, no. 15, September 2008.

[13] See Jeremie Waterman, testimony before the USITC, Washington, D.C., June 15, 2010.

[14] See Cong Cao, Richard P. Suttmeier, and Denis Fred Simon, "China's 15-Year Science and Technology Plan," *Physics Today* 59, no. 12 (December 2006): 38–43; and Sylvia Schwaag Serger and Magnus Breidne, "China's Fifteen-Year Plan for Science and Technology: An Assessment," *Asia Policy*, no. 4 (July 2007): 135–64.

[15] China's sixteen megaprojects involve a range of initiatives in the following areas: (1) advanced numerically controlled machine tools and basic manufacturing technology, (2) control and treatment of AIDS, hepatitis, and other major diseases, (3) core electronic components, including high-end chip design and software, (4) extra large–scale integrated circuit manufacturing, (5) drug innovation and development, (6) genetically modified organisms, (7) high-definition earth observation systems, (8) advanced pressurized water nuclear reactors and high-temperature gas-cooled reactors, (9) large aircraft, (10) large-scale oil and gas exploration, (11) manned space, including lunar, exploration, (12) next-generation broadband wireless telecommunications, and (13) water pollution control and treatment, with the remaining three initiatives in unannounced areas thought to be classified.

MLP, noted above.[16] In addition, Beijing has launched special national strategies to support the MLP, including in education and human resource development as well as for IP development, the subject of this report.

The MLP has taken on new dimensions with the announcement of priorities for the twelfth Five-Year Plan this spring. The new plan calls for the development of "emerging strategic industries," some of which are intended to provide the foundation for moving beyond catch-up to "leapfrog" into positions of scientific and technological leadership.[17] All demonstrate a commitment to more knowledge-intensive development, the creation of IP and standards in China, and, with them, an expanded community of stakeholders in a strong IP regime. The announcement of the strategic industries program calls special attention to the importance of IPR in stimulating "patent alliances" among enterprises and in facilitating the transfer of IP from universities and research institutes to industry.

The priorities for strategic industry development are noteworthy and include:

- Energy conservation and environmental protection technologies, including energy-saving equipment and products, pollution control, clean coal, and utilization of seawater
- Information technology (described in more detail below)
- Pharmaceutical and agricultural biotechnology
- Large-scale machines, including civilian aircraft, satellite and aerospace technology, intra- and inter-city rail transport, offshore exploration rigs, and intelligent manufacturing facilities
- Clean energy, including next-generation nuclear, wind, and smart-grid technologies
- New materials, including the development of rare earth materials, membrane materials, special glass, functional ceramics, semiconductor materials, LED materials, metal alloys and alloy steels, engineering plastics, carbon fiber, Kevlar fabrics, ultrahigh molecular weight polyethylene, and research on nanomaterials, superconducting materials, and intelligent materials
- Electric vehicles, including hybrids cars, pure electric cars, and batteries.[18]

In the information technology area, the more detailed projects include the following initiatives:

> Accelerate the construction of ubiquitous, broadband-based, integrated and secure information network infrastructures, push forward R&D and industrialization of new generation mobile communication devices, next generation Internet core equipment and smart terminals, speed up 3C convergence, and promote the R&D of pilot application of Internet of Things and cloud computing. Concentrate on developing such core basic industries as integrated circuit[s], new type display devices, high-end software and high-end servers. Heighten information service capability including software service and network value-added service[s], and speed up the upgrading of key infrastructures into smart ones. Make greater efforts to develop virtual digital technology and promote the development of cultural and creative industries.[19]

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[16] A useful listing of these policies can be found in Organisation for Economic Cooperation and Development (OECD), *OECD Reviews of Innovation Policy: China* (Paris: OECD, 2008); and McGregor, "China's Drive for 'Indigenous Innovation.'"

[17] "Decision of the State Council on Accelerating the Cultivation and Development of the Emerging Strategic Industries," State Council of the People's Republic of China, October 2010.

[18] Ibid.

[19] Ibid.

In support of some of these information and communications technology objectives, the State Council also issued a "Notice on Issuing Several Policies on Further Encouraging the Development of Software and Integrated Circuit Industries" on January 28, 2011. This document, among other things, expresses an intention to "give play to the leading role of major national scientific and technological projects, strongly support the R&D of key technologies of software and IC, strive to achieve overall breakthrough in key technologies and accelerate the industrialization, promotion and application of technologies with independent [indigenous] intellectual property."[20] In recognition of the fact that widespread piracy practices have impeded the development of the Chinese software industry, the notice explicitly calls for cracking down on infringement and actively promoting software legalization. This includes the full implementation of policies for legal software used in government departments and also the need to "vigorously guide enterprises" in the use of legal software.[21]

Given the fact that copyright violations, especially in software, are among the most widespread forms of IP infringement and the most costly to foreign companies, it will be especially interesting to observe the evolution of the software industry in the coming five years as Chinese stakeholders become more prominent. Plans for cloud computing, the Internet of Things (involving the linking of animate and inanimate objects to the Internet through the use of sensors, radio tags, and sophisticated software), and next-generation networking, more generally, will greatly stimulate demand for new software. At the same time, many Chinese software companies that have been hurt by piracy are rethinking their business models with growing interest in "software as a service" (SaaS) and exploiting the capabilities of cloud computing. For example, Kingsoft, a well-known application software company, has announced that it is changing from being a software company to an Internet company by embracing the SaaS model.[22]

With the new policy commitments of the twelfth Five-Year Plan, it is therefore reasonable to assume that an increasingly IP-intensive pattern of industrial development will emerge in China and, with it, a robust growth in patent filings, copyright and trademark applications, and other rights such as semiconductor layout designs, plant variety protection, industrial designs, or geographical indications as well as technical standards initiatives. In the discussion of projects to support the development of the Internet of Things, for instance, China is expected to introduce Chinese-developed standards for the Internet of Things "to the whole world."[23] This idea of the international diffusion of Chinese-developed standards, incorporating Chinese-developed IP, is an important theme in all policy documents.

Other initiatives to move up the smile curve include the Ministry of Industry and Information Technology's IPR Promotion Plan, introduced in 2010, and various measures to support the further

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20 "Notice on Issuing Several Policies on Further Encouraging the Development of Software and Integrated Circuit Industries," State Council of the People's Republic of China, Circular no. 4, January 28, 2011.

21 Ibid.

22 Kingsoft's statement read as follows: "In response to market demand, we have transformed from [a] traditional business model into the free model by launching free versions of Kingsoft's Internet Security products. WPS Office has successfully migrated into the Internet market, expanding to provide more value added services, such as office automation, cloud-based storage and web-office service, etc. Kingsoft PowerWord has been transformed from a software package to a learning community." "Kingsoft Announces 2010 Annual Results," Press Release, March 23, 2011, available at http://www.itnewsonline.com/showstory.php?storyid=23231&scatid=8&contid=2. See also "Kingsoft Sets Up Internet Security Subsidiary; 'Internet Security 2011' the Leading Cloud Anti-virus Software in China," ACN Newswire, available at http://www.thefreelibrary.com/Kingsoft+Sets+Up+Internet+Security+Subsidiary%3B+'Internet+Security...-a0223926275.

23 Liu Xiaofeng. "Internet of Things Enters Golden Era for Rapid Growth," China Economic Net, February 17, 2011, http://en.ce.cn/Insight/201102/17/t20110217_22224488.shtml.

development of cultural and creative industries (which are likely to be copyright-intensive).[24] Meanwhile, the Chinese Academy of Sciences (CAS) has announced its own major R&D initiative in support of vanguard projects as part of its Innovation 2020 Program. Among other things, these CAS programs emphasize the importance of R&D leading to the creation of Chinese IP and the development of national technical standards. In addition, local governments have now become major players in supporting national innovation goals by increasing their expenditures on R&D and assuming active roles in the implementation of the four aspects of the IP strategy, discussed below. China's strategy documents for IP should be seen in the context of this mix of plans and policies intended to support the MLP goal of making China an innovative nation by 2020.

IP and Patent Strategies

The National Intellectual Property Strategy, introduced in 2008, is an integrated set of guiding principles, strategic goals, specific tasks, and key policy measures. It addresses patents, trademarks, copyrights, and trade secrets, and stresses the protection, utilization, and management of IP as well as IP creation. The document begins by noting weaknesses in China's existing IP system.

> China's intellectual property regime still needs improvement. The quality and quantity of the self-reliant intellectual property still cannot meet the demands of economic and social development; public awareness of the importance of intellectual property is comparatively weak; the capacity of market entities to utilize intellectual property is not very strong; infringement of intellectual property is still a relatively serious problem; there are still some cases of abuse of intellectual property; the intellectual property service and support system and training for all types of intellectual property personnel lag behind its development; and the role of intellectual property and promoting economic and social development needs to be strengthened.[25]

Among the strategic measures mentioned are calls for the improvement of the IP regime, including laws and regulations, enforcement mechanisms, and coordination between IP activities and industrial, trade, and science and technology policies. The measures also include the importance of creating and utilizing IP, with emphasis placed on the creation of IP in the processes of research and innovation in coordination with policies for "finance, investment, government procurement, industrial development, energy and environmental protection."[26]

Where possible, according to the document, IP should be incorporated into technical standards. Industrial enterprises should become far more active in creating and employing IP, while universities and research institutes should become more attentive to the commercialization of their IP. The strategy calls attention to the importance of preventing misuses or abuses (*lanyong*) of IP and to encouraging the development of a culture of IPR. It also identifies the importance of building the human resource base through the cultivation of IP professionals (including the initiation of graduate degrees in IP in universities) and training programs for party cadres,

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[24] The future of copyright protection in China has become an increasingly complex matter as a result of the growing role of the Internet for software and cultural content distribution. An additional complication is the recent establishment of the State Council Internet Information Office in May 2011, which will play a major role in the control of Internet content and is expected by some to have a role in IP protection as well.

[25] "Outline of the National Intellectual Property Strategy," State Council of the People's Republic of China, June 5, 2008, 1.

[26] Ibid.

civil servants, and enterprise managers.[27] Finally, the document recognizes the importance of international cooperation and exchange on IP matters.[28]

As with other strategy documents, China's IP strategy incorporates benchmarks for assessing progress, which are often expressed quantitatively. In doing so, it increases the likelihood that measures of IP progress, such as the number of patent filings, will be used by career conscious officials at different levels of government to demonstrate their bureaucratic effectiveness and loyalty the central policy directives. In discussing goals for the next five years (2009–14), for instance, the IP strategy document asserts that

> China will rank among the advanced countries of the world in terms of the annual number of patents for inventions granted to the domestic applicants while the number of overseas patent applications filed by Chinese applicants should greatly increase. A number of world-famous brands will emerge. The proportion of the GDP accounted for by the value of core copyright industries will greatly increase. China should own the rights to a number of high-quality new varieties of plants and high-level layout designs of integrated circuits.[29]

As this brief synopsis of the IP strategy illustrates, IP issues have made a significant impact on Chinese public policy and now occupy an important place in the state's development agenda. This certainly includes further improvement in the legal development of IP and efforts to achieve greater harmonization with international norms. On the other hand, the strategy creates imperatives for state activism in support of an industrial policy that seeks to promote innovation and create high value–added industry. While the pursuit of the latter might accord with the former, this is not necessarily the case. As we will see, the emergence of a strengthened IP regime in the Chinese context rests uncomfortably with aspects of China's indigenous innovation policies. This uneasy tension between industrial policy and IP development, both reportedly supporting the overall innovation agenda, illustrates the conflicting imperatives in China's indigenous innovation policies.[30] Such tension is also evident in the recent National Patent Development Strategy of 2010.

As with China's IP strategy, its patent development strategy calls attention to the importance of IP for national well-being.

> In the 21st century, with (the) rapid development of the knowledge economy and the acceleration of the globalization process, patented technology has become [a] strategic resource for the core competitiveness of the country, and the patent system has become an important instrument for international industrial distribution, which is of concern to a growing number of countries.[31]

In spite of the progress that has been made in China's patent system, problems remain.

> The patent system has not become fully integrated with the development of the socialist market economy, and its role has not been brought into full play in guiding industrial restructuring and upgrading and promoting

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[27] According to incomplete statistics, nineteen of China's leading universities have established schools of IP law or centers for IP research. In addition, there are regular training programs for local officials, researchers, entrepreneurs, and company managers offered by various government agencies, and the State Intellectual Property Office (SIPO) has active programs to promote the IP strategy with local governments.

[28] "Outline of the National Intellectual Property Strategy."

[29] Ibid., 2.

[30] See Christopher Murck, statement to the Congressional-Executive Commission on China, Washington, D.C., September 22, 2010.

[31] "National Patent Development Strategy (2011–2020)," State Intellectual Property Office (SIPO) of the People's Republic of China, November 2010, 1.

> China's innovation capacity. Patent policies are not closely consistent with Chinese policies on the economy, science and technology, and an effective patent policy system to encourage and protect innovation has not been fully established. Market entities have [an] inadequate number of core patents [and] their capacity to utilize patents is poor. The system and mechanism of administration needs to be improved and law enforcement of patent protection needs to be further enhanced as well. There is still a gap between the current situation of patent information dissemination and service and the demand for economic and technological development. The general public does not know much about the patent system and [its] patent awareness is weak. These problems have largely restricted the role of the patent system in encouraging innovation and promoting economic development.[32]

In laying out the basic principles for the strategy, emphasis is placed on achieving the right balance between Chinese conditions and international trends, state interventions and market forces, and the protection of rights holders and public interest, as well as among different industries and regions.

Again, we see benchmarking, metrics, and quota-like thinking. As one observer has noted, the strategy exhibits an "innovation by the numbers mentality, much like a student who equates knowledge with scores on standardized tests."[33] For example, the document states:

> By 2020, China will become a country with a comparatively high level in terms of the creation, utilization, protection, and administration of patents…The quantity of patents for inventions for every 1 million people, and the quantity of patent applications in foreign countries will quadruple. A large number of core patents will be acquired in some key fields in emerging industries and in key technological fields of traditional industries….The proportion of patent applications [by] industrial enterprises above a designated size will reach 10%.... The patent service industry will develop quickly and the public service and social service capacity of patents basically will meet the demand of economic and social development.[34]

> By 2015, the annual quantity of applications for patents for inventions, utility models and designs will reach 2 million. China will rank among the top two in the world in terms of the annual number of patents on inventions granted to domestic applicants and the quality of patents filed [will] further improve.[35]

By 2015, laudably, improvements will have been made in the patent examination system such that the average period for examining an invention patent application will be reduced to 22 months, with the examination period for utility models being reduced to 3 months. Less clear, though, is whether there will be selective pendency, such as Chinese applicants being considered more quickly or perhaps technologies of greater strategic importance getting more examination resources. The quality of the patent examination and granting process should also rank with the best patent offices in the world.

As with the IP strategy and the MLP, China intends to encourage patenting activities by industrial enterprises—as opposed to by research institutes and universities, who currently hold

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32 "National Patent Development Strategy," 1–2.

33 Steve Lohr, "When Innovation, Too, is Made in China," *New York Times*, January 1, 2011.

34 "National Patent Development Strategy," 3.

35 Ibid., 4.

the lead in quality patents—through providing a variety of incentives and subsidies. Much is made of the importance of building an infrastructure for patent information to facilitate patent searches and analysis. The strategy thus calls for the establishment of "a multilevel and multi-aspect information public service system for patents. At the state level, [there is a need to] establish a system of macro management and business guidance for dissemination and utilization of national patent information and [to] promote extensive dissemination and effective utilization of patent information."[36] Likewise, the strategy calls attention to the need for developing a "patent service industry….involving information retrieval, analysis, early warning, data processing, database building, patent consultation, transaction, trust, assets appraisal and pledge loans."[37] The development of the industry will involve the gradual transformation of government information service agencies into commercial entities. Research institutes and universities can be expected to strengthen their IP management activities.

A Rising IP Power?

The implementation of the IP strategy has already produced a number of results. These include, in the first instance, an explosive growth in patenting and copyright applications. Total patent applications to the State Intellectual Property Office (SIPO) increased from 476,264 in 2005 to 1,222,286 in 2010. Of these, 1,109,228 were from Chinese applicants, while 112,858 were foreign.[38] During the same period, China surpassed Europe and South Korea in invention patents to become the world's third most active patenting country after the United States and Japan.[39] In the copyright area, applications for computer software copyright registrations increased from roughly 21,500 in 2006 to approximately 82,000 in 2010.[40]

The strategy has stimulated legal development with the further expansion of a system of specialized IP courts, many of which are led by judges who are acquiring a reputation for being among the most educated and professional judges in China's court system. With the expansion of courts has come a notable increase in IP litigation, most of which has involved Chinese litigants against other Chinese. In 2009, there were some 30,626 IPR civil cases, a figure which rose to 42,902 in 2010. Copyright cases accounted for roughly 24,700 cases in 2010, trademark cases rose to 8,460 in 2010 from 6,906 the previous year, and patent cases totaled 5,785 (up from 4,422).[41] This data indicates that China has become the most litigious country in the world with regard to IP. Compared to China, the United States in 2009 had only 2,192 copyright cases, 2,792 trademark cases, and 1,674 patent cases.[42]

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36 "National Patent Development Strategy," 8.

37 Ibid., 12.

38 Paik Saber, "Patent Litigation and Licensing in China" (presentation at the conference "Beyond Piracy: Managing Patent Risks New China," Berkeley Center for Law and Technology, Berkeley, California, March 10, 2011), available at http://www.law.berkeley.edu/10460.htm.

39 Based on data from the patent offices of the United States, Japan, Europe (European Patent Office), South Korea, and China, which together cover 75% of worldwide patents filed and 74% of patents granted. See Eve Y. Zhou and Bob Stembridge, "Patented in China: The Present and Future State of Innovation in China," Thomson Reuters World IP Today, Report, 2010.

40 "China Registers 82,000 Software Copyright Protection Applications," *China Daily*, January 13, 2011, http://www.chinadaily.com.cn/business/2011-01/13/content_11845908.htm.

41 Author's personal communication with Mark Cohen, 2011; and Mark Cohen, "Beyond Piracy: Patent Litigation in China" (presentation at the conference "Beyond Piracy: Managing Patent Risks New China," Berkeley Center for Law and Technology, Berkeley, California, March 10, 2011), available at http://www.law.berkeley.edu/10460.htm; and Saber, "Patent Litigation and Licensing in China."

42 Cohen, "Beyond Piracy."

The strategy has also led to the enhancement of human resources in all four strategic areas through the education and training of IP professionals and induced changes in the culture of IP, at least in some quarters. Innovation is now seen as crucial to the future of the country, and a robust IP system is seen as necessary to encourage innovation. As noted above, local governments in many parts of China—there are some 54 IP offices affiliated with the national SIPO located in subnational jurisdictions[43]—have taken up the cause of the strategy and have shown a new level of activism in all four phases.

Nonetheless, implementation of the IP strategy has revealed certain puzzles, if not contradictions, involving China's overall indigenous innovation aspirations and IP development—puzzles that reside in an increasingly complex government-industry relationship. Innovation policies have provided a variety of incentives to companies, research institutes, universities, and local governments to seek patents and other forms of IPR, a practice that has led to an explosion in IP claims that can be addressed without substantive review or examination. In patenting, especially, there is a widespread use of utility model and design patents, the quality of which is quite uncertain.[44] It is not entirely clear whether this phenomenon serves the development of genuine innovative capacity in China or whether the development of a high-quality, professional IP system is served by these policies. Some observers argue that quantity will predictably give way to quality, whereas others worry that the widespread granting of utility model and design patents, which are not examined for substance, degrades the overall IP regime in China.

Concern over the uses of utility patents is evident both among members of the Chinese legal community, who worry about patent quality and the administrative burden of processing large numbers of low quality, "junk" patents, and among foreign stakeholders, who are troubled by the possibility of abusive assertions of utility model patents for strategic purposes—perhaps by entities that are principally engaged in licensing and litigation rather than actual industrial application or explication. This latter concern grows out of the real possibility that Chinese holders of petty patents, exploiting such factors as the lack of examination for utility models (and designs), higher thresholds for invalidation of utility model patents compared to invention patents, and home court advantages, as well as China's "first to file" provision, can bring legal action against a foreign company doing business in China with products having an established patent granted in a foreign jurisdiction. The most notable example of this was the case of China's Chint Group vs. France's Schneider Electric in which a Chinese court awarded Chint $4.3 million in damages, the largest damage award thus far for patent infringement. The case was settled on appeal.

What Is the IP Paradigm?

Questions about the relationship between China's evolving IP regime and its quest for indigenous innovation inevitably lead to questions about the relationship between IP protection

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[43] Elaine T.L. Wu, "Recent Patent Related Developments in China" (presentation at the conference "Beyond Piracy: Managing Patent Risks New China," Berkeley Center for Law and Technology, Berkeley, California, March 10, 2011), available at http://www.law.berkeley.edu/10460.htm.

[44] The Chinese patent system grants three types of patents. "Utility model" patents (sometimes referred to as "petty patents" or more derisively as "junk patents") are not substantively examined and have a term of ten years from the date of filing. "Design patents" likewise are not substantively examined and also have a ten-year term. "Invention patents," on the other hand, are subject to substantive examination and have a term of twenty years. Of the 814,825 patents granted in 2010, 344,472 were for utility models and 335,243 were for designs. The great bulk of these was granted to Chinese applicants. Of the remaining 135,110 invention patents, 55,343 were granted to foreign applicants, with the remaining 79,767 granted to Chinese applicants. While the quality of Chinese patents clearly is improving, the number of petty patents is still notable. See Wu, "Recent Patent Related Developments in China."

and innovative activities more generally.[45] The standard account coming from foreign stakeholders is that a strong IP system is necessary for the development of an ecosystem that will support genuine innovation. At one level, China seems to have accepted this thesis; hence, the attempt to link IP strategy with innovation strategy. On the other hand, the Chinese innovation studies community and the IP community have learned a lot about the ways IP is deployed in commercial competition in the capitalist world and the ways in which corporate IP strategies can lead to abuses of the system. In addition, they are also aware of a suggestive Western literature on the relationships between IPR and innovation that calls attention to the complex and often not obvious connections between the two.

In one classic study, for instance, Edwin Mansfield demonstrated a rather weak relationship for most industries between the initiation of innovative activities and the existence of a patent system. Mansfield found that patents were used largely for strategic and defensive purposes but played a smaller role in actually motivating innovation.[46] In another classic paper, published in the same year as Mansfield's (1986), David Teece attempted to put the role of IPR in innovation in perspective by calling attention to the importance of other factors—technological trajectories in a given industry and the availability of "complementary assets" necessary to realize value from inventions—as well as the terms of the "appropriability regime" (the nature of IP protection) in understanding innovation. Again, the nature of the IP regime was seen as but one factor, and not necessarily the most important, for driving innovation.[47]

The Mansfield and Teece papers were published just at the beginning of a rapid expansion of patenting activity between 1980 and 2000 in the United States, when patent applications from U.S. corporations more than doubled. In discussing this phenomenon, Giovanni Dosi, Luigi Marengo, and Corrado Pasquali suggest that the explanation for this rise has less to do with an "unprecedented explosion in the amount and quality of scientific and technological progress" and more to do with changes in the legal and institutional environments and changes in the corporate strategies of companies who began to see that their intangible assets were becoming more valuable than tangible ones.[48] In addition, Dosi, Marengo, and Pasquali note that during this period new objects such as "software, research tools, business methods, genes and artificially engineered organisms" became patentable. New players, such as universities and public research institutes, became more involved in patenting activities. All the above contributed to the growth in patenting.

The authors emphasize the ways in which patents became more important for corporate strategies—for example, in demonstrating company value to potential investors, deterring potential competitors, and capturing value from infringement and counter-infringement actions against rival firms. IP has become important in strengthening the bargaining positions of firms in cross-licensing negotiations involving complex products, especially in setting standards. These developments, of course, led to the growth of the field of IP law and to an increase in corporate expenditures on corresponding legal fees as a percentage of R&D expenditures. As early as 1991,

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45 For a review, see Ove Granstrand, "Innovation and Intellectual Property Rights," in Odagiri et al., *Intellectual Property Rights*, 266–90.

46 Edwin Mansfield, "Patents and Innovation: An Empirical Study," *Management Science* 32, no. 2 (February 1986): 173–81.

47 David J. Teece, "Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy," *Research Policy* 15 (1986): 285–305.

48 Giovanni Dosi, Luigi Marengo, and Corrado Pasquali, "How Much Should Society Fuel the Greed of Innovators? On the Relations between Appropriability, Opportunities and Rates of Innovation," *Research Policy* 35 (2006): 1114.

for instance, the Department of Commerce estimated that IP-related legal expenditures by U.S. firms accounted for as much as 25% of the value of the firm's research activities.[49]

While not denying the importance of IP protection, Dosi, Marengo, and Pasquali argue that when trying to explain innovation, IP must be seen in the appropriate context. Relative to such factors as the existence of opportunities for innovation presented by technological trajectories, learning curve advantages, and lead time, IPR protection does not figure as prominently in explaining innovation as do these other factors. Indeed, a strong IP regime can in some circumstances be an obstacle for innovation, as seen, for instance, in "anti-commons" phenomena (discussed further below), in strategic rent-seeking, and wasteful litigation.[50]

Chinese scholars and officials, of course, are not unaware of this literature and the complexities surrounding the IP-innovation relationship and of the global debates on IP at the WTO and World Intellectual Property Organization (WIPO). Nor are they unaware of the strategic importance of IP for commercial competition and the problems that strong IP conditions can create for the social returns on innovation. Thus, many Chinese observers, while genuinely lamenting the problems of piracy and counterfeiting, nevertheless lack sympathy for some complaints about Chinese IP protection by foreign companies and governments. They point, instead, to the fact that many foreign companies have adapted quite well to Chinese conditions and used their IP with strategic success for profits and competitive advantage.[51]

It seems likely, therefore, that at least in some quarters in China, the West's "IP paradigm" is understood less in terms of institutional arrangements for stimulating innovation per se than as a bundle of strategic tools for commercial competition. This helps explain the importance given to "utilization" and "management" as well as to "creation" and "protection" in the IP strategy. In short, in China's new world of IP activism, Beijing is making significant efforts toward developing capabilities for strategic IP management to enhance the value of IP as a corporate and national asset. The world of Chinese IP thus should not be thought of solely in terms of the administrative and legal infrastructure of enforcement, however important, but should also be understood in terms of creating human and institutional assets to prevail in competition and to maximize value. This implies a growing role for IP managers, as well as lawyers, and an ongoing challenge to ensure that the management of IP does not replace the management of innovation.

IP management, of course, entails many activities that in the United States would typically be performed by specialized law firms, university technology-transfer offices, and IP brokerages—institutions that have not been part of the Chinese innovation landscape until recently. Such activities range from the careful incorporation of IP-creation considerations in the early stages of R&D to the development of specialized markets for IP trading. In between, there is a need for patent analysis, patent portfolio development, the development of sophisticated defensive strategies to ward off rival infringement claims and protect IP, and offensive strategies to leverage the value of the IP through the generation of revenues from license fees and royalties and through strategic positioning vis-à-vis competitors and collaborators. Activities of this sort will likely become far more prominent in the coming years as China's strategy is implemented.

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[49] Dosi, Marengo, and Pasquali, "How Much Should Society Fuel the Greed of Innovators?" 1115.

[50] Ibid., 1111. See also Brian Kahin, "Patents: A Singular Law for the Diversity of Innovation," Brookings Institution, Issues in Technology Innovation, no. 10, June 2011, 1–8.

[51] Zheng Liang and Lan Xue, "The Evolution of China's IPR System and Its Impact on the Patenting Behaviors and Strategies of Multinationals in China," *International Journal of Technology Management* 51, nos. 2/3/4 (2010): 469–96.

Toward Harmonization?

In considering whether China's IP transition is likely to follow the pattern seen in other countries, several factors require attention. First, as noted above, the country's premodern cultural legacy is one whose norms fit awkwardly with those of the Western IP tradition. China's socialist legacy, characterized by weak traditions of rule of law and protection of property, likewise, is less than hospitable to the IP principles of modern capitalism. The legacies from China's Confucian past and its more recent experience with socialism have contributed to the development of a certain skepticism about the social benefits of the Western IP system.[52] The skepticism, in turn, has been fed by perceptions of abuses of IPR in the West, especially by large international companies. China's IP regime thus unfolds against a residual distrust of the international IP system that is seen as serving the strategic interests of individual companies rather than supporting innovation and the public good. It is only a short step from this skepticism to embracing the deeply rooted inclinations—having their origins in China's modern history—toward the techno-nationalism that is frequently evident in China's science and technology and industrial policies.

Other factors distinguishing China's IP transition from the IP systems in other countries are the size of the country, economic scale and the market power this bequeaths, and its complex political economy that includes a mixture of public and private ownership, strong state direction, and a robust market economy largely operating outside state control. These factors help create a distinctive style (as well as problems) of governance that also affect the nature of the transition.

China has been referred to as an "authoritarian system with an authority crisis."[53] While the Chinese Communist Party (CCP) clearly maintains a monopoly on power in China, and is capable of effective mobilization to achieve national goals, the government's mobilization capabilities are not infinite. Indeed, they can only be employed selectively on issues the party deems to be of cardinal importance. When these capabilities are not employed, the powerful fissures that characterize China's mechanisms of governance manifest themselves. These problems of "structured uncertainty" include, as noted above, inter-ministerial differences and conflicts limiting policy coordination within the national government, as well as significant problems in implementing central government policy owing to local governments having their own agendas and political resources.[54]

Chinese public policy is often characterized by national leaders issuing vague policy statements—"government by slogan," so to speak—which then must be interpreted by subordinate central government officials and provincial and subprovincial governments. The interpretive possibilities are broad but are never far from career advancement concerns of officials who are often caught between policy implementation expectations from above and local political and administrative realities. Local government officials have considerable authority to enact legislation that can be of superior legal importance to ministerial policy pronouncements or even enactments. As these officials are locally paid, and may be concerned about local employment or local companies, they may be tempted to pay lip service to national policies while at the same time undertaking policies that primarily benefit local interests.

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52 See Hennessey, "Protection of Intellectual Property."

53 Fox Butterfield, *China: Alive in the Bitter Sea* (New York: Times Books, 1982).

54 For a useful discussion of how China's governance problems affect innovation potential, see Daniel Bresnitz and Michael Murphree, *Run of the Red Queen: Government, Innovation, Globalization, and Economic Growth in China* (New Haven: Yale University Press, 2011).

It should be noted that Chinese public policy development is also influenced by the activities of hundreds of research analysts in many different organizations who study the technology development policies of other countries and use these as a benchmark for national policy initiatives. While these activities help inform Chinese policy in ways that should facilitate productive engagement with other countries, the benchmarking activities are sometimes put together in a "mix-and-match" fashion, which can lead to a degree of policy incoherence within China and can provide the foundation for policy conflict with other countries, as some of the indigenous innovation policies, such as government procurement, have done.

As China attempts to mesh its IP regime with its ambitious industrial and technology policies, many of these governance and policymaking features are evident. Also evident is a strong "developmental state" orientation characterized by the state's active role in managing economic development, identifying priority sectors for development, and, in particular, leading the technological development on which future economic well-being depends. IP—its creation, utilization, and management, as well as its protection—thus becomes an instrument of technology policy in ways that are seemingly quite different from how IP is approached in a "regulatory state."[55] In the latter, the state's role in economic management is largely limited to creating and managing a credible legal system and acting to correct market failures. Thus, while the importance of IP for economic well-being is recognized—in the case of the United States, in the Constitution—the creation, utilization, and administration of IP is largely left in the hands of private parties. The protection of IP, however, is part of the state's mission of maintaining a credible legal system in which rights are recognized and the interests of rights holders are protected by law. The roots of the IP paradigm mentioned by Stevenson-Yang and DeWoskin are clearly found in the regulatory state.

Of course, the distinction between the developmental state and the regulatory state are not always as clear as one would like. Central to the distinction is an understanding of the state's role in technological development and innovation, as well as in economic management more generally, a role that is often contested. In the United States, often taken to be the exemplar of the regulatory state, the default assumption is that the private sector is the locus of innovative activities, with the state providing a legal system to protect private rights. However, a careful reading of U.S. history makes clear that the state has often played an active developmental role in supporting the creation, utilization, and administration of IP, albeit by more indirect or "stealth" means in recent decades.[56] Consider also Japan and Korea, often considered to be exemplars of the developmental state model. Though the Japanese and Korean states have certainly played a mostly active role in innovation, the existence of private corporations, and private property more generally, has led Japan and Korea to embrace many norms of the regulatory state paradigm once the IP transition was completed.

China is a much harder case. Its tradition of active state economic management puts it in the developmental state category. But with public ownership, and with a party elite that has vested interests in the public sector, the terms are different than in Japan and Korea. Private property is at best weakly protected, rule of law has yet to be established, with the result that rights of all sorts cannot be guaranteed. On the other hand, the fact that such a large share of the Chinese economy is outside the state sector and is subject more to market forces than administrative coordination

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55 For the classic formulation of the differences between the developmental and regulatory states, still valid today, see Chalmers A. Johnson, *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975* (Stanford: Stanford University Press, 1982).

56 Fred Block and Matthew R. Keller, *State of Innovation: The U.S. Government's Role in Technology Development* (Boulder: Paradigm Publishers, 2010).

suggests that regulatory state assumptions are far from absent. Thus, while it is fair to continue to characterize China as a Communist-controlled developmental state, one should recognize that the role of the state is becoming increasingly contested by Chinese and foreign stakeholders in China's technological development, and the interactions of state initiatives and market forces involving nonstate actors are producing a complex, *sui generis* political economy that defies easy categorization. The ways in which IP and state technology policy interact are prime examples of this political economy. Thus, the "Decisions of the State Council on Accelerating the Cultivation and Development of Emerging Strategic Industries" offers the ambiguous guidance that market forces should have the "basic roles" but "under the guidance of the government…with respect to planning and guidance, policy incentives, and organization and coordination."[57]

Thus, in considering whether China's IP transition is moving toward harmonization with the international system or diverging from it, the evidence is mixed. One should, of course, recognize that China's system is still young, having been established only in the 1980s, and that it is still ascending—rapidly, to be sure—a steep learning curve. In terms of the system's legal development, there is broad agreement that China is moving toward greater harmonization in terms of its statutes and the performance of its courts. Although not yet imposing the heavy damages against IP infringers one sees in other systems, it does grant injunctions in most cases and seems to be moving in the direction of greater damages. As noted, Chinese technological development has created a number of individuals and organizations who are becoming stakeholders in a more effective IP system. This is especially true for patents—China appears to have a larger percentage of individuals filing patents outside the corporate research environment than is seen in other countries—and with the growth of the cultural and creative industries noted above, it will also be true for copyrights, as is suggested already by the large number of copyright cases being litigated. There are preliminary signs that the quality of patents is improving, especially among China's more innovative companies and institutions. Overall, the IP culture seems to be shifting toward a greater respect for IP's importance.

However, there are also reasons to be less than sanguine about the prospects for harmonization. In spite of the positive changes in the IP culture, piracy and other forms of infringement remain extensive. Chinese culture still seems to have trouble valuing intangible assets, as in the case of its persistent insensitivity to the value of software. And legal efforts to define standards for such issues as the remuneration of inventors also reflects a difficulty of placing a value on the individual's contribution and rights to fair rewards for creativity. The elements of techno-nationalism in China's innovation policies further encourage suspicions that the country's IP transition may not be one of harmonization. China's orientation toward the international IP system reflects an underlying ambivalence. On the one hand, the legal system is trending toward harmonization, with many statements stressing the importance of international cooperation on IP matters and on innovation. On the other hand, values and ideological orientations rooted in China's sense of national interest and cultural traditions reflect dissatisfaction with the international regime and a wariness shared by many developing countries.[58] Finally, it is difficult to see how an internationally harmonized IP system can exist where the concept of rights is so weakly established and the rule of law in society in general is hostage to politics.

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[57] "Decision of the State Council," 3.

[58] See, for instance, Xuan Li and Baisheng An, "IPR Misuse: The Core Issue in Standards and Patents," South Centre, Research Paper, no. 21, June 2009.

Hyper IPR and Anti-Commons Issues

In considering the prospects for China's IP transition, it is especially useful to revisit the data on both the growth of patent filings and other IPR claims and the growth of litigation. The rapid increase of both indicates difficulties of parsing out the influences of state policy and market-inspired, utility-maximizing behavior in the contemporary Chinese IP landscape. On the one hand, state directives to develop Chinese IP, backed by the multiple incentives of the innovation strategy, help explain the surge in IP claims, especially for petty patents. On the other hand, it is harder to see the effects of government policy in the increase in litigation, except for the state's provision of the IP legal system itself. Given the highly competitive nature of Chinese commercial society, it is perhaps not surprising that Chinese parties would seek to use the legal infrastructure to advance their interests against rivals at an accelerating rate. This situation—that is, the creation of what might be called a "hyper IPR environment" having high levels of IPR claims and IPR litigation—seems to be an unexpected, and perhaps perverse, consequence of Chinese efforts to incorporate IP development into an overall innovation strategy. By incentivizing IP creation while also providing a forum that allows private parties to attempt to maximize their interests through legal combat, the regime may be exacerbating significant problems in achieving cooperation over IP matters among stakeholders in innovation. While the existence of the IP system is intended to facilitate cooperation by adjusting "the interest among different groups," as noted in the epigram, the litigiousness demonstrated by parties in China suggests that the results may be otherwise.

China is often considered to be a "low trust" society, and problems of social trust have been identified as obstacles to innovation in the past. Whether a strengthened IPR system will help compensate for problems of trust, as one would expect with more clearly defined and protected rights, or whether it will exacerbate these problems remains to be seen. But the importance of overcoming trust and cooperation problems cannot be overstated. China's innovation objectives require building far more robust networks of cooperation among Chinese firms, between Chinese and foreign companies, and between China's government research institutes, universities, and industry than have been seen in the past—a point explicitly recognized in the "Decisions of the State Council on Accelerating the Cultivation and Development of Emerging Strategic Industries."

However, if one assumes that the data on patenting and litigation reflects the intense competition characteristic of the Chinese economy, increasing strategic behavior, and a general absence of trust, it is possible that China's IP transition may encounter what has been referred to in other contexts as "tragedy of anti-commons" problems, where holders of IP rights fail to cooperate with other rights holders in situations where cooperation is necessary for genuine innovation. The tragedy becomes more likely when rights are fragmented or poorly defined, and when a lack of trust leads to increased transaction costs.[59] Problems of this sort point to the need for active state intervention and illustrate again the complex and puzzling interactions between plan and market, public responsibilities and private right seeking.

[59] Michael A. Heller and Rebecca S. Eisenberg, "Can Patents Deter Innovation? The Anti-Commons in Biomedical Research," *Science* 280, no. 5364 (May 1, 1998): 698–701.

International Perspectives

Foreign perceptions of China's IP transition vary considerably. For some, China is simply the world's worst IP infringer whose practices must be confronted wherever possible and changed. Others recognize that a transition is underway but are deeply concerned about the ways in which the IP strategy has been used in conjunction with China's industrial and technology policies to limit market access. Perceptions are to some extent a function of industry and technology, however. For companies in some industries, Chinese industrial policies employing the strategic uses of IP are more an annoyance than a serious threat. In these cases, companies have successfully protected IP by good corporate practices or by finding ways to exploit the Chinese legal system. There is the expectation in these industries that in time China will move beyond the current transitional and learning phase into a more harmonized position. For other industries, however, China's policies are threatening.

In many ways, one can look forward to an increasingly innovative and creative China providing support for a harmonized international IP regime, thereby adding value to IP rather than destroying the paradigm. Yet one can also picture a scenario in which China's transition becomes highly disruptive to established IP system norms. The rapid expansion of IPR claims in China, signs of increasingly strategic behavior, and evidence of rising litigiousness all point to an overcrowding of the space—to an IP overload or hyper IP environment. Add to this the possibility of techno-nationalist industrial policies and one can imagine a scenario characterized by increasing tit-for-tat behavior, creating an IP security dilemma that would undermine China's innovation aspirations and make international cooperation in support of innovation far more difficult.

Thus, there are many important issues in China's IP transition that warrant ongoing attention. Foreign participation in China's major national R&D and engineering projects will require serious attention to the problems of protecting trade secrets and to the terms of IP creation and technology transfer. Chinese research subsidies and subsidies for IP development are also likely to continue to be a problem, as is the question of how utility model and design patents are recognized and employed. China's approach to questions of patents in technical standards is another area where understandings with international stakeholders are likely to diverge. Finally, the fast-moving frontier of protection for Internet content and the development of new business models based on Internet platforms will require ongoing attention.

Conclusion

A central concern in today's discourse about a rising China is the extent to which a strong and powerful China is likely to conform to the rules, norms, and procedures of established international regimes. Some observers see Beijing as deeply enmeshed in the established order, profiting handsomely from it, and, therefore, content to "play our game" into the indefinite future.[60] For others, though, China is already challenging the international order, if not violating some of its norms, as one would expect from a rising power challenging the reigning hegemon.

How China approaches the challenges of innovation is central to the question of whose game is being played, and by what rules. This was made clear in a recent commencement address by Fang Bingxing, president of the Beijing University of Posts and Telecommunications, regarded

[60] Steinfeld, *Playing Our Game*.

as the father of China's "great firewall" of Internet censorship. Urging his students to use science and technology to build national strength and overcome China's past position of inferiority, Fang noted that "no matter how you put it….the Western powers' logic is the world's logic. The Western powers' principles are the world's principles." But cautioning against playing the West's game, Fang went on to argue, to the applause of the audience, that China should recognize that "strength requires real power. This power is concentrated and manifests itself in our level of science and technology." He further explained:

> Suppose two people engage in a martial arts competition. If one imitates completely the other's movements, how can one overcome the other? This is the fundamental reason why it is difficult for China to overcome Western countries in the fields of science and technology. Because our research is always trailing one step behind countries with highly developed science and technology, we lack strategic innovation and industry-leading momentum. For these reasons, amidst this kind of mutual confrontation, the weaker party can only overcome its opponent by utilizing tactics different from its opponent. China's economy has already proven that the Chinese system is successful and is good for economic development. By what standards must we adopt the Western model?[61]

The implication here is clearly that Fang envisions a new game of winners and losers in which Western rules may no longer hold sway.

But in addition to the rules of the game pertaining to China's rise, there is also the question of the payoffs, a persistent problem in the discourse on China's rise on which there is little consensus. Is China's emergence as a major player in the international economy a game in which all win to some extent, a game in which everyone is a loser (as implied by Stevenson-Yang and DeWoskin), or a zero-sum game with clear winners and losers? If not a zero-sum game, how do we assess the relative gains or losses that players might experience?

A case is often made that China's rise is a positive-sum game from which China, the United States, and other nations have all benefitted. But the fairness of the distribution of the gains from that game is contested. Many of China's justifications for its indigenous innovation policies, for instance, are based on the belief that while China has certainly profited from its growing participation in the international economy, its gains relative to the countries of the OECD world have been limited. The robust employment of industrial policies in pursuit of indigenous innovation, therefore, is taken to involve measures to alter the distribution of gains while still maintaining a positive-sum game. By extension, many complaints about the indigenous innovation policies from foreign companies reflect the fact that their share of the gains may be diminishing even while absolute gains persist.

A case can be made, though, that Beijing approaches participation in the rising China game with a deep-seated sense that engagement with the international community can only be zero sum, as implied by Fang. This belief is rooted in a reading of modern Chinese history that emphasizes China's "century of humiliation" at the hands of international society and the need for today's stronger China to assert and protect national interests, regardless of "beggar thy neighbor" consequences or the imposition of costs on others. At the same time, in the face of the many daunting problems confronting China, doubts about the sustainability of its rise contribute

[61] Fang Bingxing, "Meld Your Own Growth with the Progress of the Country" (commencement address to the Beijing University of Posts and Telecommunications, March 29, 2011), available at China Digital Times, April 3, 2011.

to splits in the national psyche between pessimism and confidence and unwarranted humility and overbearing arrogance about Chinese capabilities. Amplifying the swings between exaggerated doubt and exaggerated confidence is the perception that the game is zero sum.[62]

This report has shown that that these geopolitical ruminations are by no means divorced from the issues surrounding China's ongoing efforts to build an IPR regime—efforts that in many ways seem to point to China "playing our game." On the other hand, the attempts to build national strength by incorporating an IP strategy into a larger innovation strategy at times suggest that something other than a positive-sum game is being played.

There are limits to what outside parties can do to encourage Beijing to play a positive-sum game. China's approach to the operation of its IP system and to fostering innovation is a complex function of competing domestic interests and differing visions of international opportunities. Nevertheless, foreign stakeholders can readjust their thinking about Chinese IP and develop an activist agenda in response to the changing IP landscape.

Awareness. China's IP transition presents multiple challenges of understanding. As suggested at the outset, foreign stakeholders have focused on Chinese infringement behavior and enforcement failures. These difficult issues will continue to warrant close attention for some time. But the overall Chinese IP strategy, this report has suggested, entails much more and requires much closer attention to issues such as the link between China's R&D system and the evolving IP regime, the development of corporate IP strategies among Chinese firms, the actions of local governments in promoting the IP strategy, the emergence of IP brokers, and the development of specialized markets for IP. This requires not only better eyes and ears on the ground in China, with a greater recognition of China's regional and other differences, but also new forms of cooperation between foreign legal communities and specialists on innovation studies.

Diplomacy. Chinese leaders have recently made a number of commitments to the United States and other foreign parties to crack down on piracy and reverse industrial policies that seek to use IP in ways that are outside accepted international norms. Foreign stakeholders should continue to engage China on this issue, drilling further down into how these policies are implemented at national and local levels, and press for their full implementation. According to a recent report by the USITC, such an emphasis on improving protections and enforcement could increase profits from sales, royalties, and licenses fees of U.S. firms in China by 10%–20% and add more than 2.1 million new jobs to the U.S. economy.[63]

Engagement on innovation. As this report has shown, there is evidence to support the view that the nature of an IP transition begins to change as the number of domestic stakeholders in innovation increases. It is also true that China's efforts to integrate its IP and innovation strategies have the potential to produce undesirable and unanticipated consequences. There are thus opportunities to work with China on its approaches to innovation in ways that encourage more innovative entrepreneurship and help avoid false starts in policy development. Although the initiation of the "innovation dialogue" within the framework of the Strategic and Economic Dialogue is a useful first step to this end, the U.S. side must be prepared to commit more staff and analytic resources in order to engage China from an informed position.

Companies. Most foreign companies operating in China recognize that the IP landscape is changing, that it must be closely monitored, and that expectations for an IP transition leading

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62 William A. Callahan, *China: The Pessoptimist Nation* (New York: Oxford University Press, 2010).

63 "China: Effects of Intellectual Property Infringement."

to harmonization must be robustly expressed to Chinese interlocutors. The changing landscape clearly calls for companies to rethink their approaches to protecting IP in China. In many cases, basic steps such as more aggressively securing patent or trademark rights in China may need to be undertaken. In other instances, different types of rights or enforcement mechanisms may be considered. Many foreign companies have been reluctant to litigate their rights in the Chinese legal setting, with only about 3% of all civil IPR litigation in China today involving a foreign entity. A growing number of IP specialists now believe that foreign IP should be registered in China and that foreign rights holders should use Chinese IP law more aggressively to protect their interests.

New rules? New game? New payoffs? Changing technological frontiers create new challenges, with new industries emerging, new forms of research-to-production activities requiring attention, and an increasingly globalized innovation system posing new challenges for managing and protecting IP. China is clearly reaching a stage of technological and legal maturity where it will want a much larger voice in determining how international IP norms and procedures should develop in the face of these changing circumstances. With countries such as India and Brazil emerging as important centers of innovation as well, it seems inevitable that the international IP regime will need to accommodate new participants and perspectives. The United States must be proactive in engaging these participants and recognizing their concerns about the existing order, in arguing for a strong but fair IP system to support growth and innovation, and in attempting to find the right balance between the protection of private rights and the support of social objectives. This is the enduring challenge of a responsible IP regime.

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