



CHAPTER 14

# INTELLECTUAL PROPERTY RIGHTS AND INFORMATION SECURITY

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## Executive Summary

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The inadequacies of intellectual property rights (IPR) protection in China have been a major concern of many U.S. businesses. Some of the key issues are:

- The ineffective enforcement of existing IPR laws.
- A low level of public awareness of the importance of IPR protection.
- The inadequacies of the judicial system and processes in dealing with IPR cases.
- The decentralized nature of the court system, leading to the necessity of litigation in more than one jurisdiction and potential inconsistencies in the judgments and decisions.
- Dissatisfaction related to China's implementation of its indigenous innovation and technology transfer policies.
- The use and potential misuse of compulsory licensing.

In addition, there are also increasing concerns about cyber security. The U.S. alleges that the Chinese authorities have directly or indirectly organized cyber attacks against the U.S. The Chinese government strongly denies this. In fact, China views itself as a victim of cyber attacks as its ability to wage cyber warfare is primitive. Recognizing the enormous damage that can be done through cyber attacks, hacking has been made illegal in China. Nevertheless, the Chinese authorities cannot rule out the possibility that individuals in China are involved in cyber attacks. There are also allegations of commercial and industrial espionage via the cyber space.

However, over the last decade, China has made great efforts to improve IPR protection. China's legal and other institutional arrangements are being

strengthened, while entrenched practices that infringe IPR are being changed. To have meaningful impact on the society as a whole, such initiatives will take time to take effect and even then, more needs to be done. Recent actions taken by the Chinese government include enforcing the use of legal software and eradicating the use of pirated products in all government departments, delinking government procurement from the source of ownership of intellectual property (IP), making steady improvements in its judicial track in enforcing IPR, and reinforcing its commitment to address the problem of cross-border trade in IPR-infringing goods.

Both the U.S. and Chinese governments have agreed to continue working together to enhance IPR protection. Various bilateral cooperation mechanisms between the two economies are continuing. More recently, the Beijing Treaty on Audiovisual Performances is regarded as a milestone for China and the international intellectual property system.

In the future, China is expected to strengthen the protection of IP owners' interests, not only because it is aware that it has to meet international standards, but also because it is in its own interests to do so. China has reached the stage of economic development when the emphasis has gradually shifted from the growth of tangible inputs to innovation and technological progress as the main economic driver. To encourage and promote innovation in China, IPR protection is very important. The number of patent registrations in China has been rising rapidly in recent years and many Chinese companies are acquiring and filing for patents abroad. The owners of these patents will demand a more effective system of IPR protection in China. It is therefore hoped that in the near future, rapid progress can be made in this area.



This study recommends a few measures to deepen U.S.-China cooperation in IPR and information security:

- Mutual recognition of processing documents in IP registration;
- Wider use of site licenses as a way to promote the use of legitimate software;
- Software legalization at state-owned enterprises;
- Establishment of a national IPR court that has jurisdiction over all such cases in China;
- Strengthening the role of the cross-ministerial IP organization within the State Council;
- Improving the market for technology transfer arrangements; and
- Enhancing cyber security through closer bilateral exchange and cooperation, and through promoting international cooperation.

## Intellectual Property Rights and Information Security

### Introduction

China has actually achieved significant progress in its IPR enforcement efforts in recent years, despite the grievances expressed by many U.S. businesses about its inadequacies in this area. For example, according to a 2012 survey conducted by the U.S.-China Business Council<sup>1</sup>, more than half of the executives of its member companies surveyed indicated that China's IPR protection was either greatly improved or somewhat improved in 2011.

It is expected that the protection of IPR in China will continue to be enhanced in the future, not only because of pressure from China's trading partners and direct investors, but more importantly, because it is in the interests of China to do so. One of the major goals of China's 12th Five-Year Plan (2011-2015) for National Economic and Social Development is to transform its mode of economic growth from input driven to technical progress or innovation driven. This in turn implies that China must increase its investment in human and research and development (R&D) capital, so as to generate more inventions, pat-

ents and knowhow. In order to achieve this goal, a good system of IPR protection is essential.

This shift of emphasis to innovation has already been occurring in China. This is reflected in the rapidly rising numbers of applications by Chinese enterprises for patents and their authorizations (see Figures 7 and 8). In addition, many Chinese enterprises have been actively purchasing technology, patents and trademarks overseas. These developments show that a substantial group supporting the adoption of more stringent efforts to protect IPR is developing within China itself. Efforts by the government to enhance the effectiveness of the IPR protection regime in China are expected to be stepped up rapidly. Such a pattern of development is similar to the past experiences of many other economies, such as Taiwan in the 1980s.

### Global IPR Protection Developments and China's Increasing Participation

#### International IPR protection developments

The multilateral system governing the protection of IPR at the global level has gradually developed from

<sup>1</sup> "USCBC 2012 China Business Environment Member Survey Report", US-China Business Council, October 2012.

**Figure 1: Accession of the International IP Agreements by China and the U.S.**

Convention/System/Treaty	Accession by China	Accession by the U.S.
WIPO Convention	1980	1970
Paris Convention for the Protection of Industrial Property	1985	1887
Berne Convention for the Protection of Literary and Artistic Works	1992	1989
Patent Cooperation Treaty	1994	1978
Madrid System for the International Registration of Marks	1995	2003
WIPO Copyright Treaty	2007	2002
Beijing Treaty on Audiovisual Performances	2012	2012

Source: WIPO website

the Paris Convention for the Protection of Industrial Property of 1883, the Madrid System for the International Registration of Marks – which is governed by two treaties adopted in 1891 and in 1989 – and the Berne Convention for the Protection of Literary and Artistic Works, that concluded in the late nineteenth century. 1967 witnessed the formation of the World Intellectual Property Organization (WIPO), an agency affiliated with the United Nations. The Patent Cooperation Treaty, which was concluded in 1970, is now administrated by the WIPO.

The Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement – promulgated in 1994 – is one of the most comprehensive and influential international agreements for IPR protection in the world to date. Following the principle of national and most-favored-nation (MFN) policies, the TRIPS agreement has established minimum levels of IP protection that each WTO member country has to provide for other fellow member countries, and has introduced the rules for IP trading in the multilateral trading system. Compulsory licensing, an arrangement under which “a government allows someone else to produce the patented product or process without the consent of the patent owner” (World Trade Organization, 2006) is permissible in the TRIPS agreement in public health crises situations, such as HIV/AIDS, malaria and other epidemics. The Doha Declaration on the TRIPS and Public Health adopted in 2001 basically clarified that the

TRIPS agreement should be flexible for its member countries to promote access to essential medicines. The 2005 Ministerial Declaration further set up a legal framework allowing WTO members to export generic versions of patented drugs produced under compulsory licenses to meet the emergency needs of countries that lack the manufacturing capacity in their pharmaceutical sectors.

In the last decade, efforts to promote IPR protection globally have been stepped up despite controversies that arise from time to time. The Patent Prosecution Highway – an initiative launched in 2006 to speed up examination processes of patent applications amongst a group of participating countries – has been well received in many countries. On the other hand, the Anti-Counterfeiting Trade Agreement (ACTA) signed by the U.S. was not endorsed by many developing countries including China and India as well as some European countries<sup>2</sup>. In particular, there has been criticism that the negotiation process leading to the ACTA was undemocratic and that its provisions set an unacceptably low threshold for invoking criminal sanctions. A host of end-users worry that their ordinary activities on the internet would be spied on by the authorities under some broad and harsh definitions of infringement in the agreement. Facing significant protests in var-

<sup>2</sup> The signatories to the Anti-Counterfeiting Trade Agreement (ACTA) as at 30 June 2012 include Australia, Canada, Japan, Morocco, New Zealand, Singapore, South Korea, the U.S., the E.U. and 22 of its member countries.

ious member countries, the European Parliament finally voted to reject the agreement in July 2012<sup>3</sup>.

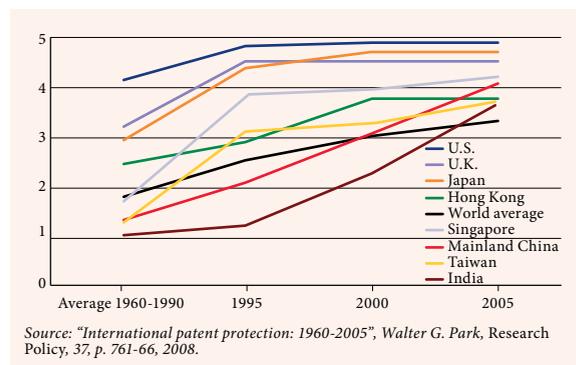
More recently, the diplomatic conference of the WIPO held in Beijing in June 2012 was a milestone both for China and the international system of IP protection. The Beijing Treaty signed at the conference by the WIPO's member states would establish a long overdue international legal framework for the protection of the economic rights of film actors and other audiovisual performers, especially in the digital world. This was the first time for China to host a conference that brought an international IP treaty to conclusion since the start of its economic reform in 1978<sup>4</sup>. Importantly, the conference has also demonstrated that it is in the interests of China to enhance IPR protection. According to Michele Woods, Director of the Copyright Law Division for the Culture and Creative Industries Sector of WIPO<sup>5</sup>, China and other developing countries have “made tremendous gains in their film industries and started to see the real need to protect their performers and their overall film industry”.

### China's progress in IPR protection

Being a latecomer in the game, China has learned the basic IPR frameworks from the West and created, within a short period of three decades, a relatively comprehensive IP system, which took some western countries more than two centuries to complete. As a former WIPO director-general, Dr Árpád Bogsch said<sup>6</sup>, “China had accomplished all this at a speed unmatched in the history of intellectual property protection”.

His view has been borne out by the Index of Patent Protection compiled by Walter Park, a leading scholar in IPR studies (Park, 2008). The Index of Pat-

**Figure 2: Index of Patent Protection, 1960-2005**



ent Protection<sup>7</sup> is an indicator of the strength of the system of patent protection facilitating comparison across 122 countries. It ranges from 1 to 5 with a lower value implying weaker protection. As shown in Figure 2, the score for mainland China rose sharply from 1.33 over the period 1960-1990 to 4.08 in 2005, by which time its score was significantly higher than the world average (3.34), and higher than India, Taiwan and Hong Kong. However, it is not easy for China to eradicate all illegal IPR-related practices and catch up with the modern standards overnight, partly due to many economic and social realities. China's IPR protection performance is therefore worse than those of the U.S. (4.88), Singapore (4.21) and the U.K. (4.54). Nevertheless, its remarkable progress in recent years and ongoing efforts to enhance IPR protection are apparent and commendable.

### The surge in IP registration, the issue of foreign and domestic grants and Chinese IP applications in China

As a result of the gradual maturity of China's IPR protection regime as well as the rising importance of China as a market, a noteworthy pattern of the

<sup>3</sup> "ACTA: Controversial anti-piracy agreement rejected by EU", BBC News, July 2012.

<sup>4</sup> "International IP Protection from 'Beijing Agreement'", State Intellectual Property Office of the People's Republic of China, 2012.

<sup>5</sup> Ibid

<sup>6</sup> "Report on Intellectual Property Protection in China", State Intellectual Property Office of the People's Republic of China, White Paper, 1994.

<sup>7</sup> Specifically, the index is an unweighted sum of five separate scores for: coverage; membership in international treaties; protection duration; enforcement mechanism; and restrictions. Two sensitivity issues of the index discussed in Ginarte and Park (1997) are that: there may be gaps between actual and statutory protection (i.e. laws may not be carried out in practice); and the weight attached to each separate score may affect cross-country/region comparisons. It is not a measure of the quality of patent protection.

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increasing IP registration/grants awarded globally (see Figure 3) is that China's IP office contributed significantly more to the growth in patent applications worldwide between 2009 and 2011 than over the period 1995-2009 (see Figure 4).

The number of patent applications (see Figure 5) and patent grants (see Figure 6) originating from foreign countries at the Chinese patent office showed an upward trend in the last few years: the largest portions were from enterprises from Japan, the U.S. and Germany.

Meanwhile, reflecting the gradual shift of emphasis of China's economic development towards innovation and technology, the numbers of patent applications by and grants to Chinese enterprises in both the domestic market and the U.S. have shown a rapidly rising trend (see Figures 7 and 8). However, China's number of utility patent grants in the U.S. (3,174 in 2011) is still small in comparison with other developed economies such as Germany (11,920 in 2011), Japan (46,139 in 2011) and the U.S. (108,626 in 2011) (see Figure 9).

### Cyber security

With hyper connectivity between computers, mobile phones and other network equipment, individuals, enterprises and governments have become more vulnerable to different sorts of cyber crimes, including espionage, sabotage, subversion and theft of commercial and industrial secrets, bringing huge potential losses to the victims. Cyber attack has been identified as a major global risk at the World Economic Forum Annual Meeting 2012 by government officials, business executives and academics. It is hard to ascertain accurately its cost to the industry or to a country. Nonetheless the problem is, to some extent, reflected in the rising premiums in the developing insurance market for cyber risk in the U.S.

The Budapest Convention on Cybercrime – open for accession since 2001 – is the first international treaty dedicated to the protection of societies against crimes committed through computer networks and

on the internet, with the objective to harmonize related criminal policies across countries. While the U.S., Canada, Japan, South Africa and most European countries are signatories to or have ratified this treaty, support from most emerging economies is thin. Given the rising economic power of the developing world and the increasing complexity of computer technology, it remains to be seen whether the convention has the potential to develop into the most effective collaboration promoting international awareness and cooperation<sup>8</sup> in this field.

Kenneth Rogoff, an international economist at Harvard University, has pointed out that cyber security and financial stability are similar in a number of respects<sup>9</sup>. In particular, they are both highly intricate issues developing very rapidly and hence it is difficult for government regulators to keep up. Furthermore, as with financial market developments before its recent crisis, many stakeholders in information technology regard the regulatory policies of governments unnecessary or as barriers dampening the growth of their industry. According to Eugene Kaspersky<sup>10</sup> – the founder of well-known antivirus company Kaspersky Lab – cyber-weapons are the most dangerous innovation of the 21st century. Both Rogoff and Kaspersky have commented on the latest super-viruses Stuxnet and Flame, and share the view that viruses originally created by well-intended governments may also be exploited for other perverse purposes. If the viruses are adapted to illicit uses by other parties in the future, the unintended consequence could be the disruption in the operation of key infrastructural systems such as financial

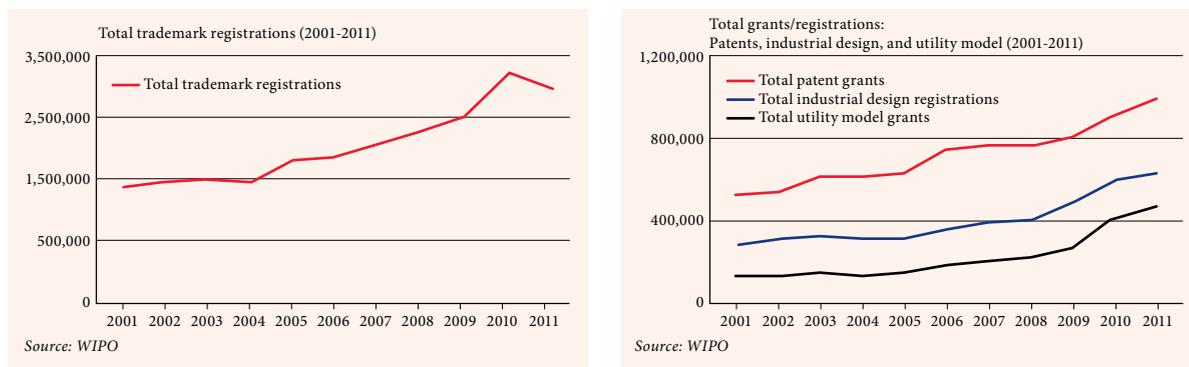
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8 Neither China nor Russia is a signatory to the Budapest Convention. The principle of 'transborder access' embodied in the convention is their main concern: sovereignty and domestic legislation of an individual country would potentially be violated due to the transnational collection of evidence by other countries.

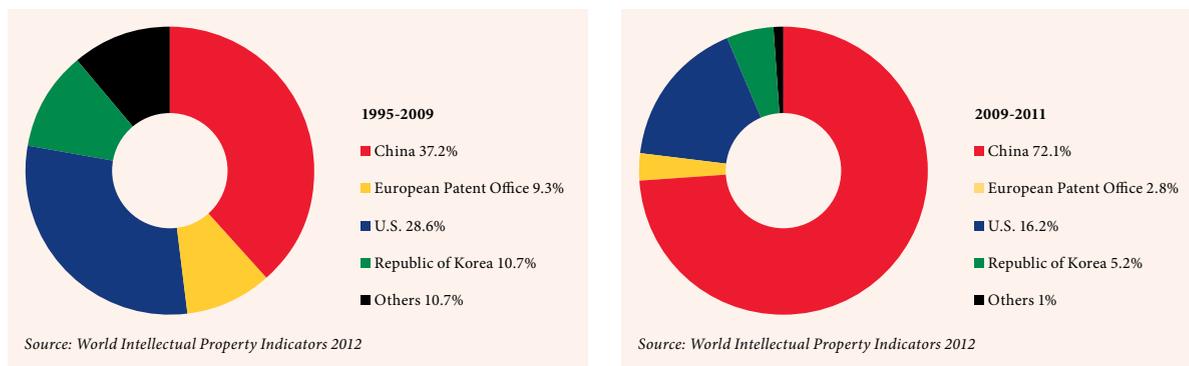
9 "Will Governmental Folly Now Allow for a Cyber Crisis?", Kenneth Rogoff, 2012, <http://www.project-syndicate.org/commentary/will-governmental-folly-now-allow-for-a-cyber-crisis>

10 "Expert Issues a Cyberwar Warning", Andrew E. Kramer and Nicole Perloth, *New York Times*, 3 June 2012, <http://www.nytimes.com/2012/06/04/technology/cyberweapon-warning-from-kaspersky-a-computer-security-expert.html?pagewanted=all>

**Figure 3: Global Trend in Intellectual Property Registration/Grants, 2001-2011**



**Figure 4: Contribution of National/Regional IP Offices to Growth in Patent Applications Worldwide**



**Figure 5: Patent Applications at the Chinese Patent Office by Country of Origin**

Country or Region	All years	1985-2006	2007	2008	2009	2010	2011
Japan	417,991	223,545	38,188	34,480	34,381	38,241	45,228
U.S.	282,600	143,748	25,908	27,656	24,629	28,636	32,023
Germany	105,974	52,354	9,388	10,145	9,694	11,297	13,096
South Korea	93,647	48,971	9,601	9,320	7,113	8,782	9,860
France	43,022	23,278	3,697	3,854	3,624	3,994	4,575
U.K.	24,822	14,304	2,012	2,233	1,911	2,087	2,275
Canada	10,223	4,937	953	1,016	989	1,137	1,191

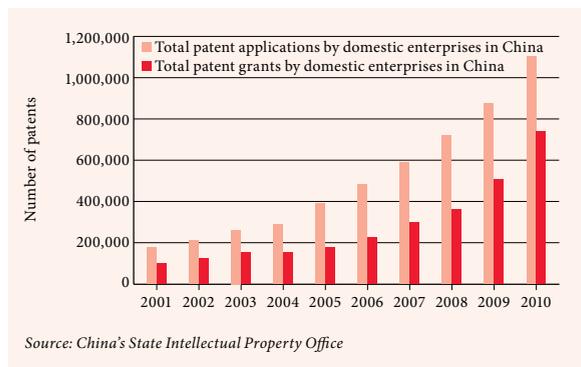
Source: China's State Intellectual Property Office

**Figure 6: Patent Grants at the Chinese Patent Office by Country of Origin**

Country or Region	All years	1985-2006	2007	2008	2009	2010	2011
Japan	241,640	100,190	21,123	26,370	33,804	29,516	30,637
U.S.	117,881	50,944	9,709	11,195	15,273	14,938	15,822
Germany	50,393	21,393	4,064	4,729	6,658	6,451	7,098
South Korea	49,276	17,591	4,373	5,605	7,950	7,117	6,631
France	22,191	10,259	1,861	1,849	3,004	2,690	2,582
U.K.	11,640	6,021	918	1,000	1,266	1,164	1,271
Canada	4,397	1,666	335	443	599	677	677

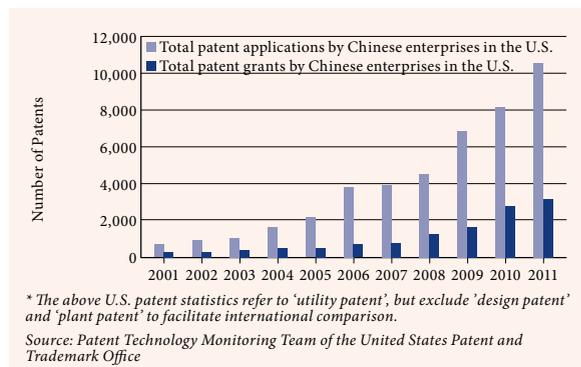
Source: China's State Intellectual Property Office

**Figure 7: Patent Applications and Grants in China Made by Chinese Enterprises**



Source: China's State Intellectual Property Office

**Figure 8: Patent Applications and Grants in the U.S. Made by Chinese Enterprises\***



\* The above U.S. patent statistics refer to 'utility patent', but exclude 'design patent' and 'plant patent' to facilitate international comparison.  
Source: Patent Technology Monitoring Team of the United States Patent and Trademark Office

**Figure 9: Utility Patent Grants in the U.S. Patent and Trademark Office by Country of Origin**

Country or Region	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
U.S.	87,600	86,971	87,893	84,270	74,637	89,823	79,526	77,502	82,382	107,792	108,626
Japan	33,223	34,858	35,515	35,348	30,341	36,807	33,354	33,682	35,501	44,813	46,139
South Korea	3,538	3,786	3,944	4,428	4,352	5,908	6,295	7,548	8,762	11,671	12,262
Germany	11,260	11,280	11,444	10,779	9,011	10,005	9,051	8,914	9,000	12,363	11,920
Taiwan	5,371	5,431	5,298	5,938	5,118	6,361	6,128	6,339	6,642	8,239	8,781
Canada	3,606	3,431	3,427	3,374	2,894	3,572	3,318	3,393	3,655	4,852	5,012
France	4,041	4,035	3,868	3,380	2,866	3,431	3,130	3,163	3,140	4,450	4,531
U.K.	3,961	3,831	3,622	3,443	3,142	3,581	3,292	3,087	3,174	4,302	4,307
China	195	289	297	403	402	661	772	1,225	1,655	2,657	3,174
Israel	970	1,040	1,193	1,028	924	1,218	1,107	1,166	1,404	1,819	1,981

Source: Patent Technology Monitoring Team of the United States Patent and Trademark Office



systems or power plants. Undoubtedly, the issue of information security calls for broader and more international discussions and cooperation in the coming years.

## The Protection of Intellectual Property Right in the U.S. and in China

### The U.S.

According to the U.S. Department of Commerce, in 2010 IP-intensive industries<sup>11</sup> supported about 40 million American jobs (27.7% of all jobs in the U.S.), 34.8% of the U.S.'s GDP and up to 60% of its merchandise exports. The vigorous protection of IPR in both the domestic and foreign markets has therefore long been a key policy of the U.S. government. Measured by the Index of Patent Protection<sup>12</sup>, the U.S. protection system is regarded as the strongest and most comprehensive one in the world. In recent years, it has made further progress in agency coordination to enforce more effectively its laws fighting piracies and counterfeits, and in reducing online infringement through voluntary practices by the private sector. Building on its longstanding legal and administrative measures, the U.S. underwent a thorough patent reform in accordance with the 2011 Leahy-Smith American Invents Act. One of the provisions of this act will lead to a replacement of the first-to-invent rule by the first-to-file rule widely adopted in other countries, which would contribute to a more harmonized global patent standard.

Furthermore, to promote the interests of American companies overseas, the U.S. has been carrying out two major investigations into the conditions of IPR protection in foreign countries. First, the “Spe-

cial 301 Report” is an annual analysis of the IPR protection status of America’s trading partners, conducted by the U.S. Trade Representative (USTR) since 1989. Assessing the countries on a case-by-case basis and giving corresponding recommendations, the “Special 301 Report” groups countries into three categories, namely Priority Watch List, Watch List and Section 306 Monitoring, according to their levels of IPR protection and enforcement. Secondly, the U.S. International Trade Commission is responsible for the Section 337 Investigations that look into unfair competition of U.S. imports, most of which have been related to IPR infringement in recent years.

### China

China is a latecomer to the subject of IPR. In order to accede to the World Trade Organization (WTO) in 2001, the Chinese government devoted a great deal of effort to improving its IPR legislation during the 1990s. Such efforts have intensified since the turn of the century when China started introducing policies to change its development model from an export and tangible-inputs-driven economy to a domestic demand-driven economy with an emphasis on innovation and technology as an essential source of growth.

The recent progress made by the Chinese government is remarkable and encouraging. For example, the Special IPR Enforcement Campaign introduced in 2010 was made permanent by the Chinese government in 2011<sup>13</sup>. It also released a ‘China’s Action Plan on Intellectual Property Protection’ in the same year<sup>14</sup>. Taking the concerns of other countries into account, China has removed the regulation that government procurement has to be sourced from firms with domestic ownership of IP<sup>15</sup>. It was announced at the Fourth Meeting of the U.S. China Strategic and Economic Dialogue that,

<sup>11</sup> Patent-intensive industries are defined as the industries whose patent-intensities (i.e. patent/job ratios) are above the average intensity of all industries. Trademark-intensive industries are those with trademark intensities (i.e. trademark registration/employment ratio) above the average intensity of all industries. Essentially all industries related to the production of copyrighted materials are copyright-intensive industries (U.S. Department of Commerce, 2012).

<sup>12</sup> “International patent protection: 1960-2005”, Walter G. Park., Research Policy, 37, p. 761-766, 2008.

<sup>13</sup> “Ambassador’s Roundtable on Intellectual Property Protection”, Gary Locke, speech at the event, Beijing, 12 April 2012.

<sup>14</sup> “China’s Action Plan on Intellectual Property Protection 2011”, State Intellectual Property Office of the People’s Republic of China, 2011.

<sup>15</sup> “Intellectual Property Rights”, 2012 American Business in China White Paper, American Chamber of Commerce in China, 2012.

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“consistent with the Legislative Plan of the State Council and government procurement working plan of the Ministry of Finance for 2012, China is to issue the Implementation Regulations for the Government Procurement Law and the final Administrative Measures for the Government Procurement of Domestic Products as soon as possible.”

Moreover, the Chinese government has pushed forward the program of using legal software in government agencies, setting out the objectives that: the central government and all provincial governments have accomplished the task by 30 June 2012; and the inspections and rectification works at governments at the provincial level and those at the *xian* (county) level are expected to be completed by the end of 2013<sup>16</sup>. The Chinese government has incorporated the software assets into the government assets management system, and reflected the expenditure on information network and software procurement and updates in the budget accounts. Building on the initial priority enterprises pilot project, it is also prepared to extend its legal software efforts to the enterprise sector.

The efforts made by the Chinese government to further improve its judicial track to safeguard IP owners’ rights have also been appreciated by the American Chamber of Commerce in China<sup>17</sup>: a number of American patent trial principles and techniques have been adopted by the Supreme People’s Court in its recent judicial interpretations.

### **U.S.-China cooperation in IPR and discussions on safeguarding information security**

The U.S. and China have initiated various discussions and bilateral cooperation mechanisms in the last few years. One event of particular significance was the launch of the Patent Prosecution Highway pilot program between the two countries in 2011<sup>18</sup>.

This signifies U.S. recognition of the improving quality of China’s patent examination process. Under this program, when at least one claim of an applicant is deemed patentable by either China’s State Intellectual Property Office or the U.S. Patent and Trademark Office, the applicant may request the other office to fast track the examination of corresponding claims in the corresponding applications.

During the fourth U.S.-China Strategic and Economic Dialogue, both countries committed to tackle the problem of cross-border trade in IPR-infringing products, and attached great importance to the protection of trade secrets. The Chinese government has affirmed that its Annual Work Plan of the State Council Leading Group on Intellectual Property Enforcement would include provisions fighting against the misappropriation of trade secrets.

In addition, the signing of the U.S.-China Intellectual Property Rights Cooperation Framework Agreement, the launch of the U.S. Information Technology Office Ambassador’s Roundtable on IPR Protection, the identification of IPR as a key issue in the Joint Liaison Group on Law Enforcement Cooperation and the introduction of the U.S.-China Intellectual Property Adjudication Conference during the last two years have all exemplified the intensification of intergovernmental collaboration in enhancing IPR protection.

It is also encouraging that the U.S.-China Security Dialogue – which started in 2009 and is organized by the research institutes of the two countries – has been providing a constructive platform for formal discussions and informal exchanges on information security between U.S. and Chinese government officials and scholars.

## **Major Concerns about China’s IPR Protection and Cyber Security**

Notwithstanding the efforts of the Chinese government to enhance IPR protection in recent years, it

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<sup>16</sup> “China: provincial level authorities accomplished software legalization”, Ministry of Commerce of the People’s Republic of China, 2012.

<sup>17</sup> 2012 American Business in China White Paper, American Chamber of Commerce in China, 2012.

<sup>18</sup> “USPTO and SIPO Announce Launch of Landmark Patent Prosecution Highway Pilots”, United States Patent and Trademark Office, 2011.



is understandable that, due to the relatively short history of IPR enforcement efforts in the country, the large size of China, a legal system that is still in the process of maturing, and the complex nature of many IPR issues, the inadequacies of IPR protection in China remain a major concern of many American businesses.

### **Enforcement of IPR laws**

Over the last decade, U.S. enterprises and government have continued lodging complaints about the seriousness of IPR infringements in China. Even though the Chinese government has been carrying out a series of reforms, U.S. stakeholders cast doubt on whether the Chinese attitude is genuine and whether its announcements are credible. One major reason for this problem is the complexities of the political, social and economic environment in China. Even though the central government is truly sincere in stepping up its IPR protection, the outcomes depend largely on the effectiveness of enforcement by local governments and courts. Because of the vast differences in the economic and social conditions in different parts of China, and the devolution of government authority to local governments since the reform, some degree of local discretion is inevitable. It is not uncommon that the effective implementation of the well-intended reforms in IPR laws at the local level is delayed or frustrated by some vested interests or by bureaucratic red tape. For instance, the central government has decided to delink government procurement from domestic ownership of IP since 2011, but complaints about the continuation of such practices in many provinces or cities still arose in 2012. Another practical constraint giving rise to a time lag between announcement and implementation is that there is a shortage of experienced and well-trained professionals in local governments to settle IPR disputes and cases. A lack of sufficient resources for comprehensive IPR investigation, together with the abovementioned factors, delay the realization of commitments made by the

central government leading to negative impressions of some American businessmen.

A related problem in IPR enforcement has to do with cultural and historical factors. The role of IPR protection in economic development did not receive adequate emphasis in China until recent years. Chinese IPR laws to a large extent are a legal transplant of those of developed countries; its indigenous formulation and development process was basically non-existent in the early stage of economic reform in China. Despite its gradually improving legal framework, modern laws pertaining to IPR were not in place until as late as the early 1980s: the Patent Law was enacted in 1984, and revised in 1992, 2001 and 2008; the Trademark Law was formulated in 1982, and was revised in 1993 and 2001; and the Copyright Law was enacted in 1990 with two revisions made in 2001 and 2002. The inclusion of the entry 'intellectual property' in *Xinhua Zidian* – the best-selling Chinese dictionary first published in 1957 – was done in 2000 and this could be a proxy measure of the level of awareness of such concepts for an average Chinese citizen. This puts into perspective the dissatisfaction of many American businesses that have high expectations in evaluating Chinese performance. China is on the Priority Watch List of the "U.S. Special 301 Report", being criticized for a host of problems including, but not limited to, trademark squatting, online piracy, junk patents arising from a low level of inventiveness requirement for a utility model patent, and the disclosure of trade secrets in the process of new product approval.

### **Need to improve judicial process in dealing with cases on IPR infringement**

The IPR protection in China features a 'two-track' system with an administrative track comprising the offices of relevant commercial and cultural departments at different levels and regions, and a judicial track under which disputes could resort to the rulings or reconciliations of courts. China has been relying on the former to play a dominant role in

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enforcement and safeguarding the interests of IPR holders in recent years because its judicial track is underdeveloped relative to those in many developed countries. Another problem with the judicial track that is a source of complaint from U.S. businesses is the insufficient compensation for victims of patent infringement in China.

According to the American Chamber of Commerce in China<sup>19</sup>, due to the lack of a discovery-type process in proceedings, gathering evidence to prove changes in profit caused by infringing behaviors could be an arduous task. The difficulty in collecting evidence to prove the violations of rights is also not uncommon in cases of trade secret theft or copyright infringement.

#### **Progress exemplified in 2009 copyright infringement case**

Despite these concerns, the case of Tomato Garden over copyright infringement handled by the Suzhou Huqiu District Court in 2009 was well received by American enterprises. Four individuals involved in distributing popular pirated versions of Microsoft's Windows XP on their tomatolei.com website were sentenced to prison and required to pay compensation of around RMB3m (US\$441,000). According to a statement by the Business Software Alliance<sup>20</sup>, "the verdict of this case represents the end of China's largest online software piracy syndicate and marks a milestone in China's efforts to crack down on Internet piracy". Liu Fengming, Vice President of Microsoft for the Greater China region, applauded the decision and said that "it shows the government is really taking action"<sup>21</sup>.

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19 "Intellectual Property Rights", 2012 American Business in China White Paper, American Chamber of Commerce in China, 2012.

20 "Chief Criminals in Tomatolei.com Case Sentenced to Prison", Business Software Alliance, 20 August 2009, <http://sc-cms.bsa.org/country/News%20and%20Events/News%20Archives/en/2009/en-08202009-tomatolei.aspx>

21 "Chinese Court Jails and Fines Pirates of Windows Software", *New York Times*, 21 August 2009, <http://www.nytimes.com/2009/08/22/technology/22piracy.html>

#### **Technology transfer and indigenous innovation**

The Chinese government has promulgated the Medium- and Long-term National Plan (MLP) for Science and Technology Development (2006-20) in an attempt to encourage firm-level R&D for commercial purposes, and to raise international competitiveness. In other words, the indigenous innovation policy is regarded by China as a stepping stone to benefit its economy and – through the increased economic activity – develop a better society. Nonetheless, from the perspective of some Americans, the policy symbolizes illiberal techno-nationalism adversely impacting on their economic welfare. For example, there have been complaints that China's indigenous innovation policies have resulted in unfavorable treatment and market access problems for foreign firms in the software, automotive and wind energy sectors. Some American businessmen have complained that their technologies are transferred involuntarily to their Chinese partners in the form of mandatory licensing of technology in joint ventures or through the requirement to set up R&D centers in which Chinese researchers may transfer their technologies to Chinese firms when they leave. They are also concerned that they will be required to supply source codes, product designs and other sensitive information to government-owned or operated laboratories in the mandatory testing and certification processes. Other regulations in line with Chinese government policy on domestic technical standards may also hurt the interests of U.S. IPR owners.

#### **Compulsory licensing issues**

China's State Intellectual Property Office (SIPO) announced measures concerning compulsory licensing in 2003 and 2005, and amended corresponding provisions in its revision of the Patent Law in 2008. Having integrated previous versions of legislation, the office released a draft of new measures for public consultation in October 2011. Following India's lead – who granted its first compulsory license in



March 2012 to a pharmaceutical company to manufacture generic drugs to treat cancer – the Newly Revised Measures for Compulsory Licensing of Patent Implementation came into force in May 2012 in China. The overall policy move does not violate the TRIPS Agreement and is also completely consistent with the provisions of other international treaties. According to Kajal Bhardwaj<sup>22</sup> – a legal expert specializing in HIV, health and human rights’ issues – it is very encouraging to see the Chinese government overhaul relevant articles and incorporate this legal right into its maturing IPR regime. Notwithstanding the fact that relevant measures have already been in place for a number of years, Chinese pharmaceutical firms have not requested any compulsory licenses.

However, in the eyes of foreign pharmaceutical companies that produce the original drugs, the new measure could harm their interests. According to Article 49 of Chinese Patent Law, “where a national emergency or any extraordinary state of affairs occurs, or public interests so require, the patent administration department under the State Council may grant a compulsory license for exploitation of an invention patent or utility model patent”. Besides, one requirement for a compulsory license is whether the patentee has fully exploited the patent or met market demand. Some American stakeholders complain that the aforementioned provisions are vague in the sense that some terms, such as ‘public interests’ and ‘full exploitation’, are not clearly defined. The problems of lack of transparency and the imbalance of bargaining power between the Chinese government and an individual company in the course of closed-door negotiations put foreign pharmaceutical firms in a very unfavorable position. They worry that compulsory licensing could effectively become a powerful strategy that the Chinese government could use to twist the arm

of foreign pharmaceutical companies into cutting prices, which is inconsistent with the original intention of the WTO agreements.

### **Cyber security issues**

From time to time, the U.S. government makes allegations that the Chinese authorities have directly or indirectly organized or supported cyber espionage against American corporations and government departments. U.S. concerns about cyber crimes coming from China are complicated by the blurred dividing line between the public and the private sector in China. There is a suspicion that some Chinese enterprises may illegally obtain information from the U.S. with the aid of or for the Chinese government. The Chinese government strongly denies this and has reiterated that China is also a victim of cyber attacks; notwithstanding its rapid technological development, the ability of the Chinese government to wage cyber warfare is primitive and therefore is unlikely to do so with other countries. Indeed, recognizing the enormous damage that can be done through cyber attacks, hacking has been made illegal in China. The narrow coverage of related laws in China and its lenient penalties for these sorts of crimes could also be sources of mistrust by the U.S. The two countries lack an identified communication channel in response to a cyber crisis, although they have their own formal procedures to handle an emergency. In addition, infrequent bilateral meetings between related bodies for law enforcement cooperation and mutual investigative support in cyber crime cases are a stumbling block to an effective resolution.

When part of the production process of telecommunications equipment and devices takes place in a foreign country, the end-user country is inevitably exposed to a certain degree of risk that vulnerabilities or unauthorized capabilities have been introduced to its related networks or infrastructures. This supply chain risk is the concern of not only Chinese users importing hi-tech goods from the U.S., but also

<sup>22</sup> “China changes patent law in fight for cheaper drugs”, Tan Ee Lyn, Reuters, 8 June 2012, <http://www.reuters.nl/article/2012/06/08/us-china-medicines-patents-idUSBRE8570TY20120608>

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U.S. companies utilizing the manufacturing capacity of factories in China<sup>23</sup>. The dissolution of the joint venture between Symantec and Huawei Technologies – which was the only major alliance between American and Chinese network security firms in 2011 – reflects the tensions associated with IPR infringement and network intrusion by China, as perceived by the U.S.

## Our Recommendations

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There are a number of ways for both countries to reduce the conflicts or misunderstandings arising from IPR protection issues. The suggestions given below are expected to serve the interests of both the U.S. and China and create a business environment conducive to enhancing economic cooperation and development.

### **Mutual recognition of the processing documents required for IPR patent registrations**

While the Berne Convention and the WIPO Copyright Treaty have set up harmonized standards for the international protection of copyright, a system for patent protection with effectiveness comparable to the above arrangements has yet to be established. The overall patent backlogs at the trilateral offices – namely the European Patent Office, Japan Patent Office and United States Patent and Trademark Office – rose over the period 2004 to 2009. Partly due to the rapid growth in patent applications in China, Korea and India, the aggregate backlogs in major IP offices around the world are expected to increase in the coming years. Ideally, it would be best to have a unified system of patent registration that applies globally – or to acceding countries – and adminis-

trated by a multilateral organization. However, this is difficult to achieve in the short and medium term.

The next best alternative is to have reciprocal recognition of patent registrations, by agreements either bilaterally or among a group of countries. According to a study published by the Intellectual Property Office of the United Kingdom<sup>24</sup>, mutual recognition could significantly reduce the time costs of examining duplicate applications. For example, the backlogs could be lowered by about nine backlog months (from 48 backlog months in the baseline scenario) after five years of implementation if the mutual recognition system results in a 25% reduction in the amount of time spent on processing duplicate applications. Notwithstanding its potential benefits, reciprocal recognition is difficult to achieve in the near future. For example, there is no such agreement between the U.S. and countries in the E.U. The probability of China and the U.S. reaching such a bilateral agreement is quite low.

It would, however, be useful for the two countries to start with a bilateral agreement allowing the processing papers used for patent applications in one country to be used in applications in the other country. This would greatly facilitate the registration of U.S. patents in China and vice versa. The Patent Prosecution Highway pilot program between the two economies serves as a good testing ground and it would be interesting to monitor and evaluate its progress and effectiveness. It would be prudent for government officials from the two IP offices to meet regularly to exchange information on the latest progress and to look into the possibility of expanding the existing program. Given the rapid rise in Chinese patent applications and as the Chinese IPR protection regime moves towards international standards, closer cooperation could lead to the reduction in patent backlog and therefore processing times in the two countries.

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<sup>23</sup> Despite these concerns, a report released by the US Government Accountability Office (GAO) in April 2013 found that “no cyber-based incidents involving the core and access communications networks had been reported using [three established reporting] mechanisms to the federal government from January 2010 to October 2012”. For details, please refer to the report “Communications Networks: Outcome-Based Measures Would Assist DHS in Assessing Effectiveness of Cybersecurity Efforts”.

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<sup>24</sup> “Patent Backlogs and Mutual Recognition: An Economic Study Prepared by London Economics”, Intellectual Property Office of the United Kingdom, January 2010, <http://www.ipo.gov.uk/p-backlog-report.pdf>



### **Wider use of site licenses**

There are various business arrangements under which both the U.S. and China may reap the benefits from trading IP-intensive goods. An American software company could, for example, sell its software at a bulk purchase price to a university in China, and allow all its students and staff to use the software legally.

Site licenses could satisfy the needs of Chinese users, as well as provide American IP owners with reasonable and certain returns. By allowing an organization to copy and use the software on multiple computers within a specific site after it buys the license – at a bulk discount price – from the software company, a site license is an effective means to achieve software legalization in private and public sectors of China. Similar arrangements have taken place with electronic magazines in China. For example, in the case of U.S. publication *Science*, the National Natural Science Foundation of China and the American Association for the Advancement of Science reached an agreement in 1997 permitting internet users in mainland China free access to the magazine after the Chinese government paid a usage fee. In another similar deal in 2002, the National Science and Technology Library bought electronic periodicals from academic publishing house Maney and Royal Society Publishing in the U.K. These transactions essentially involve the acquisition of national licenses, which could be viewed as an extension of a site license to the country level.

Experience from Australia shows that, by asking drug suppliers to compete for a government subsidy by lowering the prices of their drugs, consumers would benefit from lower prices and a much wider use of the drug<sup>25</sup>. Such a program has the potential to transmute an economic deadweight loss – lower output and higher prices under a monopoly – to

a significant consumer surplus – lower prices and larger market consumption. The government subsidy on the other hand helps to maintain or even slightly improve the profits of the drug companies.

### **Software legalization at state-owned enterprises**

It is recommended that the Chinese government's commitment to eradicate the use of pirated software is applicable not only to the central, provincial and municipal governments, but also to the centrally-owned and locally-owned SOEs.

### **Establish a national IPR court in China**

Currently, Chinese courts operate in each of the thirty one provinces, municipalities and autonomous regions, each with its own jurisdiction over IPR cases in its respective territory. This means that companies may need to litigate in all the different courts across the country in order to protect its interests. For various reasons, the decisions of the different local courts could vary between one another and this creates confusion and complications. For instance, the ruling on a recent dispute over the trademark of iPad in China between Proview Technology (Shenzhen) and Apple in the Shanghai court was different from that in the Shenzhen court.

China could simplify its IP processes by setting up a national court under which all IP cases would be tried and the decisions binding and enforceable in every province, municipality and autonomous region in China. It would be useful to learn from the experience of countries with more mature development of their IP sector. In Japan and the U.S., certain types of IPR appeal cases are tried in their courts of appeal for IPR. The U.S. Court of Appeals for the Federal Circuit – playing the role of final judge over IPR cases – is a prominent example. Some other countries including South Korea and the U.K. have independent IPR courts or patent courts processing all or major IPR cases. Setting up a nationwide IPR court in China could improve the efficiency of its judicial track through pooling the

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<sup>25</sup> "The Australian Pharmaceutical Subsidy Gambit: Transmuting Deadweight Loss and Oligopoly Rents to Consumer Surplus", Mark Johnston and Richard Zeckhauser, *Prescribing Cultures and Pharmaceutical Policy in the Asia-Pacific*, Karen Eggleston (ed), Shorenstein Asia-Pacific Research Center, 2009.

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manpower in different regions and provinces; and legal and technical experts would agglomerate and form a powerful and unified legal framework for IPR protection. In addition, both domestic and foreign IP owners can save on the resources litigating in different local courts in China, as well as avoid the risk of inconsistent rulings.

### **Strengthen the role of the cross-ministerial IP organization within the State Council**

Recognizing the need for a single cross-ministerial intellectual property organization within the State Council to fully implement government IPR policies, the Leading Group for National IPR Protection was formed in 2004. Now is the time to further strengthen the enforcement and coordination role of this organization to ensure full compliance.

### **Improve market for technology transfer arrangements**

In the 4th U.S.-China Strategic and Economic Dialogue, both countries have committed to, “intensive, on-going discussions, including all relevant agencies, of the implementation of China’s February 2012 commitment that technology transfer and technology cooperation is to be decided by businesses independently and not be used by the Chinese government as a pre-condition for market access”. Improving the market for technology transfer arrangements – thus making business deals a voluntary arrangement – creates a mutually beneficial business environment. The principle of national treatment would allow foreign and domestic firms to compete on a level playing field.

### **Promote information security through exchange and cooperation**

Both the U.S. and China have expressed concerns about cyber security issues in some key government documents:

- The draft guidelines of *Information Security Technology – Guide of Personal Information Protection* was published by the Ministry of Industry and Information Technology in China for public consultation in 2011.
- The report “International Strategy for Cyberspace” was released by the White House also in 2011.
- The Strategic Security Dialogue (SSD) under the framework of the Strategic and Economic Dialogue provides a platform for discussion between the U.S. and China in order to reduce misunderstandings. As the former U.S. Defense Secretary Leon Panetta said, it is crucial for the two sides to cooperate and develop ways to avoid miscalculations which may adversely affect the bilateral relation.

Besides the SSD, the two governments have been advised to establish additional high-level communication channels for civilian and military officials to exchange views over information security and handle cyber contingencies. More participation by the private sector in bilateral meetings would also be beneficial. Both parties have been encouraged to push forward cooperation between their Computer Emergency Readiness Teams (CERTs)<sup>26</sup>.

In fact, there has been an ongoing “Sino-U.S. cybersecurity dialogue” between the Center for Strategic and International Analysis (CSIS) in the U.S. and the China Institute for Contemporary International Relations (CICIR) since 2009. They have issued a joint announcement in June 2012, summarizing their agreements and differences.

Cyber security is a rapidly evolving global challenge, and is an important issue to not only the U.S. and China, but also the rest of the world<sup>27</sup>. However,

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<sup>26</sup> This view was shared by the China Institute of Contemporary International Relations and the Center for Strategic and International Studies after their bilateral meeting on cooperation on cyber security held in June 2012.

<sup>27</sup> See also the discussion in a recent article by Zbigniew Brzezinski, “The World Needs New Rules of War for its Cyber Age,” *Financial Times*, 25 February 2013.

the issues of cyber security are extremely complex and do not lend themselves to easy solutions<sup>28</sup>. A new international governance mechanism is probably needed to safeguard it. However, the disagreements over the Budapest Convention amongst different countries demonstrate the challenges involved in getting a global agreement on this subject. During Secretary Kerry's visit to Beijing in April 2013, it was agreed by the two countries that a special working group will be established under the Strategic and Economic Dialogue (S&ED) to begin discussion on the issue of cyber security. The group should work toward developing a road map on how the two countries can a) collaborate on cyber security, and b) collaborate to develop an international agreement on cyber space. It is recommended that the two governments aim at completing the negotiations within 18 months.

### **Section from *Cyber Standoff***

*By John J. Hamre, the President and CEO of the Center for Strategic and International Studies*<sup>29</sup>

Every businessman that I know has experienced serious cyber attacks on his/her company. One CEO told me recently his company gets 60,000 attacking emails a day. Most companies do not want to discuss it because it invites unwelcome press attention and too often club-footed government oversight.

And in recent years, the words 'cyber attacks' and 'China' have become virtually linked. Cyber criminals are everywhere, but China has become the bogey man of cyber insecurity. It is becoming a genuine source of instability in Sino-American relations.

Several years ago, CSIS started a quiet dialogue with Chinese security elements on the cyber security problem. No one is naïve about

this. Neither China nor the United States is prepared to forego spying on each other using cyber tools. Neither country will deny itself the ability to use cyber-attack tools if we get into a war with each other. God knows a war with China would be enormously destructive and counterproductive, but we and China will always reserve cyber-attack tools for future use if we need to. No one is naïve about this.

But that doesn't mean that we can't find tangible areas where we can cooperate. Neither country would want to let a third country propel us into a war or serious tension through cyber techniques. It is quite easy for cyber attackers to masquerade their identity by capturing an unwitting computer in another country to launch attacks. One of my nightmares is that a hostile foreign intelligence service would design a clever attack against a US public utility – the famous "turn out the lights in Chicago scenario" – but mask the attack by launching it from China. Indeed, when the United States experienced the frightening attack using anthrax against US Senators, the letters containing the anthrax were crudely designed to suggest that the attack came from Muslim terrorists. Our Chinese counterparts are just as concerned on this front as are we.

Neither China nor the United States wants to let criminal gangs in our respective country attack the other country's banking system. We are inextricably linked in a network of daily financial transactions that are highly beneficial to both countries. We don't want that put at risk by criminal gangs or hostile intelligence forces.

Neither country wants to let its computers be used by terrorists acting against the other country or against a third country.

In short, there many areas where we genuinely share common interests in dealing with cyber insecurity, even when as sovereign nations we reserve the right to harm the other for

<sup>28</sup> See, for example, the excellent discussion in Dave Clemente, "Cyber Security and Global Interdependence: What is Critical? Executive Summary." Chatham House, February 2013.

<sup>29</sup> John J. Hamre, "Cyber Standoff", Center for Strategic and International Studies (CSIS), Dec 2012.

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national purposes.

The great problem, of course, is the ambiguous status of attackers who have working ties with government entities. When an American firm finds it has lost the design of important products to a foreign hacker, was that attack an act of a government intelligence-gather or of criminal theft of intellectual property for financial gain? There are several countries in the world where you can't tell the difference, honestly, including China.

But I believe that there are opportunities to work more creatively with China to lessen this great problem. In one sense, it is not entirely unlike the problems we endured for many years—and still do for that matter—where Chinese private sector elements stole the design of American products—or simply created counterfeited labels of American products on containers of adulterated local products for sale to gullible Chinese consumers. Ten years ago this was a rampant and rising problem. It is now significantly better because American companies directly confronted Chinese political leaders, demanding action. And there has been action to lessen the problem. It is by no means solved, but it is moving in the right direction. And American companies have become smarter in protecting their product lines, and have captured handsome market shares in China because their products are known for safety and effectiveness.

As I said, no one is naïve about the massive problem we face. Yelling at China is no substitute for American companies and private citizens doing a much better job protecting their computer networks. Computer experts say that fully half of the computers on the world-wide internet have no effective security features. This is a problem that has been vividly before us for more than a decade. And, yes,

US Government officials do need to challenge China to bring discipline to cyber space within China's control. These activities are becoming serious impediments to closer relations.

But I also believe that we have an opportunity for genuine dialogue and constructive work with Chinese counterparts on problems that we do share. The problem is exceptionally hard, but it is not hopeless.

## Bibliography

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Abbott, Frederick M., Thomas Cottier and Francis Gurry (2011), "International intellectual property in an integrated world economy", New York: Wolters Kluwer Law & Business.

American Chamber of Commerce in China (2012), "Intellectual Property Rights", 2012 American Business in China White Paper, Beijing, China.

Associated Press (2009), "Chinese Court Jails and Fines Pirates of Windows Software", retrieved from the *New York Times*, <http://www.nytimes.com/2009/08/22/technology/22piracy.html>

Atkinson, Robert D. (2012), "Assessing China's Efforts to Become an Innovation Society: A Progress Report", Information Technology and Innovation Foundation, Washington D.C.

BBC News (2012), "ACTA: Controversial anti-piracy agreement rejected by EU", retrieved from <http://www.bbc.co.uk/news/technology-18704192>

Brzezinski, Zbigniew (2013), "The World Needs New Rules of War for its Cyber Age", *Financial Times*, 25 February 2013.



- Business Software Alliance (2009), “Chief Criminals in Tomatolei.com Case Sentenced to Prison”, retrieved from <http://www.bsa.org/country/News%20and%20Events/News%20Archives/en/2009/en-08202009-tomatolei.aspx>
- China Institute of Contemporary International Relations and Center for Strategic and International Studies (2012), “Bilateral Discussions on Cooperation in Cybersecurity”, retrieved from [http://csis.org/files/attachments/120615\\_JointStatement\\_CICIR.pdf](http://csis.org/files/attachments/120615_JointStatement_CICIR.pdf)
- Clemente, Dave (2013), “Cyber Security and Global Interdependence: What is Critical? Executive Summary,” Chatham House, February 2013.
- Economics and Statistics Administration and United States Patent and Trademark Office (2012), “Intellectual Property and the US Economy: Industries in Focus”, Washington D.C.: U.S Department of Commerce.
- Etzioni, Amitai (2013), “China Might Negotiate Cybersecurity”, *The National Interest*, retrieved from <http://nationalinterest.org/commentary/china-might-negotiate-cybersecurity-8222>
- Etzioni, Amitai (2013), “Cyberwar and the Private Sector”, *The National Interest*, retrieved from <http://nationalinterest.org/commentary/cyberwar-the-private-sector-8160>
- Executive Office of the President of the US (2013), “Administration Strategy on Mitigating the Theft of US Trade Secrets”, retrieved from [http://www.whitehouse.gov/sites/default/files/omb/IPEC/admin\\_strategy\\_on\\_mitigating\\_the\\_theft\\_of\\_US\\_trade\\_secrets.pdf](http://www.whitehouse.gov/sites/default/files/omb/IPEC/admin_strategy_on_mitigating_the_theft_of_US_trade_secrets.pdf)
- Ginarte, J., and W. Park (1997), Determinants of patent rights: A cross-national study, *Research Policy*, 26, pp. 283-301.
- Glenny, Misha (2012), “A Weapon We Can’t Control”, *New York Times*, retrieved from <http://www.nytimes.com/2012/06/25/opinion/stuxnet-will-come-back-to-haunt-ushtml>
- Hamre, John (2012), “Cyber Standoff”, Center for Strategic and International Studies, <http://www.chinausfocus.com/peace-security/cyber-standoff/>
- Intellectual Property Office of the United Kingdom, “Patent Backlogs and Mutual Recognition: An Economic Study Prepared by London Economics”, January 2010, <http://www.ipo.gov.uk/p-backlog-report.pdf>
- Johnston, Mark, and Richard Zeckhauser (2009), “The Australian Pharmaceutical Subsidy Gambit: Transmuting Deadweight Loss and Oligopoly Rents to Consumer Surplus”, *Prescribing Cultures and Pharmaceutical Policy in the Asia-Pacific*, Karen Eggleston (ed), Shorenstein Asia-Pacific Research Center.
- Kramer, Andrew E., and Nicole Perlroth (2012), “Expert Issues a Cyberwar Warning”, *New York Times*, retrieved from <http://www.nytimes.com/2012/06/04/technology/cyberweapon-warning-from-kaspersky-a-computer-security-expert.html>
- Locke, Gary (2012), “Ambassador’s Roundtable on Intellectual Property Protection”, retrieved from <http://beijing.usembassy-china.org.cn/20120412roundtable-on-intellectual-property-protection.html>
- Mandiant (2013), “APT1: Exposing One of China’s Cyber Espionage Units”, retrieved from [http://intelreport.mandiant.com/Mandiant\\_APT1\\_Report.pdf](http://intelreport.mandiant.com/Mandiant_APT1_Report.pdf)

- 
- Ministry of Commerce of the People's Republic of China (2012), "China: provincial level authorities accomplished software legalization", retrieved from [http://www.chinaipr.gov.cn/newsarticle/news/government/201207/1672593\\_1.html](http://www.chinaipr.gov.cn/newsarticle/news/government/201207/1672593_1.html)
- Office of the United States Trade Representative (2012), "2012 Special 301 Report", Washington D.C.
- Park, Walter G. (2008), "International patent protection: 1960-2005", *Research Policy*, 37, p. 761-766.
- Rogoff, Kenneth (2012), "Will Governmental Folly Now Allow for a Cyber Crisis?", retrieved from <http://www.project-syndicate.org/commentary/will-governmental-folly-now-allow-for-a-cyber-crisis->
- Spence, Michael (2012), "Reinventing the Sino-American Relations", retrieved from <http://www.project-syndicate.org/commentary/reinventing-the-sino-american-relationship>
- State Intellectual Property Office of the People's Republic of China (1994), "Report on Intellectual Property Protection in China (White Paper)", Beijing: China, retrieved from <http://www.chinaembassy.ee/eng/ztlm/zfbps/t112909.htm>
- State Intellectual Property Office of the People's Republic of China (2011), "China's Action Plan on Intellectual Property Protection 2011", retrieved from [http://english.sipo.gov.cn/laws/developing/201104/t20110426\\_601291.html](http://english.sipo.gov.cn/laws/developing/201104/t20110426_601291.html)
- State Intellectual Property Office of the People's Republic of China (2012), "International IP Protection from 'Beijing Agreement'", retrieved from [http://english.sipo.gov.cn/news/iprspecial/201206/t20120620\\_711999.html](http://english.sipo.gov.cn/news/iprspecial/201206/t20120620_711999.html)
- Tan, Ee Lyn (2012), "China changes patent law in fight for cheaper drugs", Reuters, retrieved from <http://www.reuters.com/article/2012/06/08/us-china-medicines-patents-idusBRE8570TY20120608>.
- U.S. Department of Defense (2013), "Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013", Washington D.C.
- U.S. Department of Treasury (2012), "Joint U.S.-China Economic Track Fact Sheet- Fourth Meeting of the U.S. China Strategic and Economic Dialogue (S&ED)", Washington D.C.
- U.S. Government Accountability Office (2013), "Communications Networks: Outcome-Based Measures Would Assist DHS in Assessing Effectiveness of Cybersecurity Efforts", Washington D.C.
- U.S. House Permanent Select Committee on Intelligence (2012), "Investigative Report on the U.S. National Security Issues Posed by Chinese Telecommunications Companies Huawei and ZTE", U.S. House of Representatives, Washington D.C.
- U.S. Intellectual Property Enforcement Coordinator (2012), "2011 IPEC Annual Report on Intellectual Property Enforcement", Washington D.C.
- U.S. International Trade Commission (2010), "China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy", Washington D.C.
- U.S. International Trade Commission (2011), "China: Effects of Intellectual Property Infringement and Indigenous Innovation Policies on the U.S. Economy", Washington D.C.



---

U.S. Patent and Trademark Office (2011), “USPTO and SIPO Announce Launch of Landmark Patent Prosecution Highway Pilots”, retrieved from <http://www.uspto.gov/news/pr/2011/11-70.jsp>.

U.S. -China Business Council (2012), “USCBC 2012 China Business Environment Member Survey Report”, retrieved from <https://www.uschina.org/info/members-survey/>.

U.S. -China Economic and Security Review Commission (2012), “Occupying the Information High Ground: Chinese Capabilities for Computer Network Operations and Cyber Espionage”, Washington D.C.

World Trade Organization (2006), “TRIPS and pharmaceutical patents: fact sheet”, retrieved from [http://www.wto.org/english/tratop\\_e/trips\\_e/trips-factsheet\\_pharma\\_2006\\_e.pdf](http://www.wto.org/english/tratop_e/trips_e/trips-factsheet_pharma_2006_e.pdf).