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THE EVOLUTION OF CHINESE ATTITUDES TOWARD PROPERTY RIGHTS IN INVENTION AND DISCOVERY*

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1. INTRODUCTION

Modern China (or the People's Republic of China ("P.R.C.")) is as complex and imposing as ancient China was mysterious. With well over one billion people, ample natural resources, a tradition of creative and inventive genius during pre- and mid-dynastic periods, and an emerging market-based economy possessing the potential to become one of the world's largest economic engines in the twenty-first century, the long-tortuous, but recently rapid evolution of China's attitudes toward property rights in invention and discovery commands attention. It is now almost

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universally recognized that technological change is critical to long-term economic growth.¹ Encouraging technological research, development, and commercialization through effective government policies is a necessary, albeit insufficient, condition for the advancement of China's developing economy. Thus, the new Chinese patent system² and its practical implementation provide an illuminating partial portrait of attitudinal change.

Although knowledgeable observers have had their differences about whether the role of patents in encouraging technological advancement and commercialization outweighs their arguably anticompetitive exclusionary effects, today's consensus is that the benefits of an appropriately tailored patent system more than counterbalance its costs.³ The point is essentially moot except in debates over how to fine-tune patent systems to seek a more nearly optimal balance of competing public interests. From the perspective of a developing country such as China, it is an inescapable fact that all developed nations have correspondingly well-developed patent systems,⁴ and that the increasing interdepend-

¹ With his foundational work in the 1950s, Robert Solow led the way toward general acceptance of this proposition. See, e.g., Robert Solow, *Technical Change and the Aggregate Production Function*, 39 REV. ECON. & STAT. 312 (1957) (setting out to measure the effect of increased capital on productivity and finding that in the 1909-1949 period approximately 80% of the productivity increase was actually attributable to a combination of technological change and improved quality in the workforce). See also EDWARD F. DENISON, ACCOUNTING FOR UNITED STATES ECONOMIC GROWTH 1929-1969, at 128 (1974) (estimating that, with economies of scale isolated, 27% of U.S. economic growth between 1929 and 1969 was partly attributable to advances in knowledge); EDWARD F. DENISON, THE SOURCES OF ECONOMIC GROWTH IN THE UNITED STATES AND THE ALTERNATIVES BEFORE US 271-72 (Brookings Inst., 1962) (estimating that 36% of the rise in output per worker between 1929 and 1957 was attributable to the advance of knowledge); F.M. Scherer, *Inter-Industry Technology Flows and Productivity Growth*, 64 REV. ECON. & STAT. 627 (1982) (estimating that in the post-WWII era research and development ("R&D") has contributed about one percentage point per year to U.S. productivity, or about half of the annual rate of growth in productivity).

² Patent Law of the People's Republic of China (1992), reprinted in 2 China L. for Foreign Bus. (CCH) ¶ 14,201 (Jan. 1, 1993) [hereinafter P.R.C. Patent Law].

³ See, e.g., ROBERT M. SHERWOOD, INTELLECTUAL PROPERTY AND ECONOMIC DEVELOPMENT 84-85 (1990).

⁴ See Gao Lulin, *A Preliminary Analysis of the TRIPS Negotiations of the Uruguay Round of GATT*, CHINA PAT. & TRADEMARK Q., Jan. 1993, at 8, 9 (noting that more than 100 countries are signatories of the Uruguay Round of GATT, nearly 30 others comply with its provisions, and that these countries together account for over 90% of world trade volume).

ence of virtually all economies means that China must act likewise to be a true participant in the global economy.⁵

In our tracing of Chinese attitudes toward invention and discovery, one can see that a culture deeply embedded with traditions completely antithetical to the patenting of inventions and to the granting of property rights in other forms of intellectual products has recently moved toward recognition of the necessity of a modern patent system. Realizing this necessity was first a function of attracting foreign investment and obtaining favorable trade status, as one would expect of any nation with a relatively undeveloped economy. The Chinese also seem to have realized that an effective patent system accessible to Chinese nationals may foster the entrepreneurial spirit essential to an internally driven shift to market economics. Although the evidence indicates that progress is definitely being made, it likewise suggests that realization of the patent system's potential for helping to drive internal technological advancement may be some time away.⁶

Some who have studied recent developments in China's intellectual property laws generally, and patent laws particularly, are quite sanguine about the likelihood of success for these developments.⁷ Others, however, remain unconvinced that China has developed, or will even ultimately develop, an effective patent

⁵ See, e.g., Tang Zong Shun, *The Chinese Patent System in the Service of Modernization*, CHINA PAT. & TRADEMARK Q., April 1992, at 23, 24 (explaining that the fundamental aim of patents in China, as elsewhere, is to accelerate the spread and application of inventions and transform them into productive forces); *Intellectual Property Protection in China*, BBC SUMMARY OF WORLD BROADCASTS, June 20, 1994, available in LEXIS, News Library, Allnews File (explaining that, if effective, intellectual property reform in China can not only promote science and technology, but also can make positive contributions toward the development and optimization of the international intellectual property system).

⁶ See P.R.C. Patent Law, *supra* note 2. The first modern patent law was passed in 1984 but did not become effective until 1985; substantial amendments were adopted in 1992 and became effective in 1993.

⁷ See, e.g., Naigen Zhang, *Intellectual Property Law Enforcement in China: Trade Issues, Policies and Practices*, 8 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 63, 82 (1997); Lawrence P. Harrington, Note, *Recent Amendments to China's Patent Law: The Emperor's New Clothes?*, 17 B.C. INT'L & COMP. L. REV. 337, 337-39 (1994) (predicting future integration into the world economy by China because of patent reform).

system.⁸ Some are simply unconvinced that centuries-old Chinese cultural traditions can be reversed in the foreseeable future.⁹ Others are unpersuaded that entrepreneurialism and other hallmarks of an efficient market economy can coexist with socialistic and authoritarian policies.¹⁰

The P.R.C.'s 1985 patent law, with major amendments in 1993 that rendered it similar to the patent laws of many well-developed nations,¹¹ clearly cannot contribute substantially to the nation's long-term economic development unless several other conditions also are met. We discuss several of these additional requisites for an otherwise well-designed and well-implemented patent system to fulfill its role in aiding economic maturation. Among the most obvious are the following: (1) The continuing commitment of the Chinese leadership to the development of a market-based economy is essential. This commitment does not require a great deal of discussion because it appears to be very real and sustained, seemingly subject only to the possibility of future negative political developments.¹² We can only speculate about

⁸ See, e.g., Susan Tiefenbrun, *Piracy of Intellectual Property in China and the Former Soviet Union and its Effects Upon International Trade: A Comparison*, 46 BUFF. L. REV. 1, 3 (1998).

⁹ See *id.* at 4-5.

¹⁰ See, e.g., WILLIAM P. ALFORD, *TO STEAL A BOOK IS AN ELEGANT OFFENSE: INTELLECTUAL PROPERTY LAW IN CHINESE CIVILIZATION* 2-3 (1995).

¹¹ See *supra* note 6; see also *infra* Section V.

¹² As the P.R.C.'s leaders undoubtedly have seen, increased prosperity is necessary for long-term political stability. At some point, however, the political leadership probably faces a paradox. If their plans succeed and the Chinese people prosper, the nation's much sought-after economic success may clash with its lack of political freedom. There are many who having gained a certain degree of economic well-being, may begin to think about higher-order values such as political freedom. Although no one can predict the level to which this tension will rise or how the many possible scenarios are likely to play out, there is reason for optimism that economic imperatives and political reason will prevail over time. See generally MILTON FRIEDMAN, *CAPITALISM AND FREEDOM* 7-21 (1962) (arguing that a capitalist economy can co-exist with totalitarianism for a time, but that economic and political freedom are too intertwined for them to exist in opposite states for a long period of time, and also observing that the author's views echo those of notable economists such as Edward Dicey, Friedrich Hayek, Ludwig von Mises, and Julian Simon).

Until very recently, any questions about possible adverse political changes would have related only to changes in the P.R.C. In June 1999, however, questions arose about the future of Sino-U.S. relations as a result of alleged espionage by Chinese agents. See, e.g., Stan Crock et al., *The New China Syndrome*, BUS. WK., June 7, 1999, at 30. Although a U.S. economic pullback from Sino-

U.S. trade certainly would be a major setback for China's economic modernization effort, it is unlikely to happen for several reasons:

- (1) China wants to join the World Trade Organization ("WTO"), and further lowering various trade barriers, including those caused by ineffective intellectual property protection, is a prerequisite. See, e.g., Frances Williams, *Elimination of Tariffs by WTO Members Sought*, FIN. TIMES (LONDON), June 25, 1999, at 5, available in LEXIS, News Library, Fintme File (describing leading chemical industries' urging of WTO members to substantially reduce tariffs on chemicals, with China expressing a willingness to do the same in preparation for WTO entry); *Foley Urges Japan to Fuel Economic Recovery*, JAPAN ECON. NEWSWIRE, June 25, 1999, available in LEXIS, News Library, Jen File (explaining that U.S. ambassador to Japan Thomas Foley believes that China may join the WTO by the end of the year); Dexter Roberts, *A Tale of Two Families*, BUS. WK., June 28, 1999, at 52 (focusing on the disparate effects of economic modernization on differently situated Chinese people and observing that Washington and Beijing are both seeking to resolve the remaining obstacles to China's WTO membership); *Seminar to Brief Officials, Entrepreneurs on WTO*, XINHUA NEWS AGENCY, June 25, 1999, available in LEXIS, News Library, Xinhua File (reporting on P.R.C. leaders briefing Chinese government officials and business people about the WTO and the long-term benefits of membership).
- (2) Most business leaders, the U.S. administration, and U.S. congressional leaders recognize that Chinese membership in the WTO will inure to the long-term benefit of the United States itself. See, e.g., Crock, *supra*, at 31; *Foley Urges Japan*, *supra*; Laura D. Tyson, *Why the U.S. Should Welcome China to the WTO*, BUS. WK., May 31, 1999, at 30.
- (3) Even after the reports of alleged espionage, President Clinton called for a renewal of China's most-favored nation ("MFN") status. But despite saber rattling in Congress, a two-thirds vote in both houses is required to revoke the status and many members of Congress see the long-term advantages of maintaining and improving trade ties with China. See, e.g., Nancy Dunne, *Fight on China's MFN Begins*, FIN. TIMES (LONDON), June 4, 1999, at 7 available in LEXIS, News Library, Fintme File. Unsurprisingly, on July 27, 1999 the House voted to extend China's MFN status (of course, it only takes a favorable vote from one of the two houses). See, e.g., Paul Bluestein, *House Extends China's Trade Status; Vote, Heated Debate Set Stage for Battle Over Beijing's WTO Bid*, WASH. POST, July 28, 1999, at A20. If the P.R.C. ultimately does become a member of the WTO, this annual ritual concerning the renewal of its MFN status will cease. As an aside, numerous articles in the news media reported on an almost daily basis that the combination of political division at the top in China, coupled with the usual group of China-bashers in the U.S. Congress, could slow down China's entry into the WTO. Whatever the delay, however, too many nations want it to occur for it to not be viewed as inevitable. See, e.g., Ian Johnson & Helene Cooper, *U.S. Trade Officials Invite Chinese to Washington for Talks on WTO*, WALL ST. J., Sept. 23, 1999, at A14 (noting progress of Sino-U.S. talks); Ian Johnson, *Divided Beijing Pushes Deadline for Joining WTO By 1999's End*, WALL ST. J., Sept. 20., 1999, at A20 (noting some evidence of division among the

future Sino-U.S. political relations from the perspective of either nation, and such speculation is beyond the scope of this article. The commitment itself is unaffected by the current recession throughout much of Asia, except that it may actually harden the leadership's resolve to strengthen the nation's economy sufficiently to make it better able to weather downturns of this nature, especially those like the present one that is substantially attributable to economic problems in Japan, Korea, Singapore, and other countries in the region. (2) A similarly sustained commitment to the development of China's legal system as a whole, as well as its intellectual property regime, is clearly imperative. The P.R.C. must have both an attractive economic climate and a fair, dependable, and relatively efficient legal system to persuade foreign companies to do more business there and especially to transfer technology there. Financial institutions require the same if they are to increase direct foreign investment in Chinese economic growth. Moreover, Chinese enterprises ultimately will require similar conditions if they are to carry out the role that they must play in order for them to contribute meaningfully to internally driven growth and technological development; an economy that depends predominantly on foreign investment and technology transfer is still a developing economy. (3) The infusion of re-

PRC's leadership, but also noting that almost all of the WTO's 134 nations have already voted to let China join).

One major hurdle was overcome just before this article went to press. Over the November 13-14, 1999 weekend, which the U.S. had set as a final deadline, China and the U.S. finally reached agreement on the opening of key Chinese markets (such as telecommunications and financial services) and the lowering of tariffs. See, e.g., *In Historic Pact, U.S. Opens Way for China to Finally Join WTO*, WALL ST. J., Nov. 16, 1999, at A1. As of this writing, in order for China to gain WTO entry relatively soon, it still needs to conclude a similar agreement with the European Union before November 30, 1999, which is far more likely after the Sino-American accord. See *id.* To demonstrate how close to the edge the negotiations were before agreement, the Monday, November 15, 1999 print edition of the *Wall Street Journal* carried an article indicating that the talks appeared to be on the verge of failure. See Ian Johnson, *U.S. and China Dig in Heels During Extended Trade Talks*, WALL ST. J., Nov. 15, 1999, at A2. However, the Interactive (on-line) edition of the *Wall Street Journal* posted the story on the final success of the talks in the early morning hours of November 15.

Another postscript is in order. After the Cox Report accused China of espionage on a wide scale, the Chinese produced an extremely thorough rebuttal that essentially debunked all meaningful portions of the Cox Report. See Marcus W. Brauchli, *China Rebutts U.S. Allegations of Atomic-Weapons Espionage*, WALL ST. J., July 16, 1999, at A12.

sources to non-military research and development must be expanded greatly. It is to be expected that an economy still in its early stages of development will depend primarily on foreign investment and foreign technology (acquired either legally or illegally) for quite some time. Again, however, this is not a characteristic of a developed economy.¹³

Section 2 of the article outlines the historical development of Chinese cultural traditions that made patents and other forms of intellectual property virtually unthinkable. Section 3 discusses the markedly unsuccessful attempts by foreigners to introduce intellectual property regimes during the nineteenth and early twentieth centuries, and by the Chinese themselves from the 1911 overthrow of the last dynasty and advent of the Republic to the early period of Communist rule in the 1950s. Section 4 examines developments aimed at modernizing the Chinese economy upon emergence from the 1966-1976 Cultural Revolution's economic, political, and legal darkness, including those leading to enactment of China's first modern patent law in 1985 and substantial amendment in 1993.¹⁴ Section 5 examines today's Chinese patent law, with a comparison between several of its major provisions and their counterparts in the United States and other nations. Section 6 evaluates recent evidence of both progress and problems in the P.R.C.'s effort to sustain its commitment to develop (1) a market economy, (2) a workable legal system based on the rule of law, and (3) an effective patent system. We include in this discussion a brief analysis of localism—a condition in some parts of China characterized by city-level and province-level protectionism enforced by local officials in complicity with powerful cadres of local business leaders and even a few locally stationed military personnel—which emerged as a negative by-product of the P.R.C.'s otherwise sound move to decentralize economic decision making. We also take note of Chinese efforts to eliminate local-

¹³ Although beyond the scope of this article, the future path of China's military is similarly very important because a belligerent path could certainly hinder the nation's attractiveness to foreign investors and its full acceptance into the international economic order. The stance of China's military depends, of course, on the future control of P.R.C.'s civilian government over its military and the government's decisions about how to use the military.

¹⁴ See *supra* note 6.

ism while retaining the benefits of decentralization.¹⁵ Section 7 closes with summary comments and several concluding observations.

2. HISTORICAL ATTITUDES TOWARD INVENTION IN CHINA

As the oldest continuous civilization on Earth, the Chinese have long been an exceptionally creative and inventive people. It is well known that the Chinese invented countless items of utility and novelty long before they were either reinvented or copied by the West: including the decimal system, seismograph and compass, guns and gunpowder, block type, movable type, paper, porcelain, matches, and cast iron.¹⁶ Despite such a remarkable history of technological and creative enterprise, there is little if any Chinese tradition of intellectual property.¹⁷

Chinese civilization can be traced at least to the twenty-first century B.C., with the advent of the first dynasty, Xia.¹⁸ Although the first several dynasties did not completely consolidate China into a nation-state, the imperial dynasties began to do so in 221 B.C.¹⁹ The imperial dynastic period lasted until the overthrow of the Qing dynasty and formation of the Republic of China in 1911.²⁰

¹⁵ Although localism should have the same negative effect on the development of an effective patent system as on enforcement of copyright and trademark laws, we deal with the problem and its attempted solution quite sketchily because almost all of the evidence of the problem and its attempted solution involve examples of copyright and trademark piracy rather than patent infringement. The simple reason is that copyright and trademark infringement occur easily on a massive scale, and therefore, are more publicly visible and widely reported. See *infra* at Section VI.4.

¹⁶ Other notable examples of very early Chinese inventions include a far more efficient harness that, by not restricting a horse's breathing, permitted one horse to pull the load that two or three horses using the European-developed harness could pull, the wheelbarrow, the iron moldboard plow, the helicopter rotor and propeller, the crossbow, and the distillation process for alcohol. The blood circulation system also was discovered in China over 400 years before its usually attributed 1628 discovery by William Harvey. See Joseph Needham, *Science and China's Influence on the World*, in THE LEGACY OF CHINA 234, 234-308 (Raymond Dawson ed., Oxford Univ. Press paperback 1971).

¹⁷ See ALFORD, *supra* note 10, at 2.

¹⁸ FEDERAL RESEARCH DIVISION, LIBRARY OF CONGRESS, CHINA—A COUNTRY STUDY 5 (Robert L. Worden et al. eds., 4th ed. 1988) [hereinafter LOC, CHINA—A COUNTRY STUDY].

¹⁹ See *id.* at 11-13.

²⁰ See *id.* at 29-30.

Early Chinese laws on copying illuminate the way in which ancient China regarded products of the intellect. Beginning early in the imperial dynastic period, Chinese rulers issued decrees criminalizing the copying of certain works, although these decrees could hardly be characterized as copyright in the modern sense. The ruling groups had no apparent thought of either creating property-like rights in works or encouraging creative activity.²¹ In fact, when the work copied was not a writing by one of the ancient philosophers, a government work considered to be sensitive, or banned material such as pornography, copying was seen as an important source of knowledge dissemination. Moreover, copying was viewed as a valuable link to the past in a society in which past philosophies and cultural norms served to legitimize current practice.²²

Aside from government-sponsored works considered to be sensitive and forbidden material, such as pornography,²³ the writings of the ancients were the most important works protected from unauthorized copying.²⁴ Sanctions were intended to place the dissemination of ancient works under government control for two purposes. First, Chinese leaders wished to control the beliefs and ideas of the populace, especially the literate portion of the populace, in order to preserve conformity and sociopolitical stability. Second, they wished to maintain the accuracy and orthodoxy of these works, which were vital to Chinese moral, social, and legal structures.²⁵ Although their ideas were not totally new or original, the two dominant ancient writers, Confucius (or Kong Zi) in the fifth and sixth centuries B.C. and Mencius (or Meng Zi) in the third and fourth centuries B.C., largely developed what came to be known as Confucianism.²⁶ The dominance of Confucian thinking in China influenced Chinese attitudes toward

²¹ See ALFORD, *supra* note 10, at 9-10, 13.

²² See *id.* at 20-22.

²³ See *id.* at 14-15.

²⁴ See *id.*

²⁵ See *id.* at 19-20; see also RUDI VOLTI, *TECHNOLOGY, POLITICS, AND SOCIETY IN CHINA 18-19* (1982) (highlighting the historical importance of Confucianism to Chinese civilization).

²⁶ See, e.g., Brian Barron, *Chinese Patent Legislation in Cultural and Historical Perspective*, 6 INTEL. PROP. J. 313, 315-17 (1991) (noting that Confucius drew partially upon the customs and philosophical writings of the early Zhou dynasty (1027-221 B.C.), which antedated Confucius by approximately 300 years).

products of the intellect. Its emphasis on personal development, in contrast to personal gain, helped create a culture in which the individual was viewed as quite important, but primarily so because of his or her contribution to society.²⁷ The notion that creative and inventive accomplishments could be the subject of individual property rights was not simply foreign to their mode of thinking, but was essentially beyond the scope of their mental picture of the world. It was a mental picture painted with proto-socialistic hues that shared many values with the later emergence of a formally socialist economic system in the mid-twentieth century.²⁸

Most of the evidence regarding traditional Chinese attitudes toward copying relates to writings rather than devices and products for at least two reasons. First, the Chinese possessed technology for block type and then movable type hundreds of years before Western nations, making it far easier to copy writings. Second, in a twist on the idea of "who gets to write the history," the evidence of these attitudes is found in the works of early Chinese historians and other writers who themselves were members of the intellectual elite. This elite had a powerful literary orientation and disdained the mundane, such as practical physical innovations.²⁹ Although there are obviously historical records of the startling degree of early Chinese inventiveness—otherwise we would not know about it—reporting on devices and products was simply not a priority for intellectuals whose writings now serve as the primary evidence we have about Chinese history. It is nonsensical to think, however, that deeply ingrained beliefs about something as fundamental as the individual's role in soci-

²⁷ See ALFORD, *supra* note 10, at 10; Barron, *supra* note 26, at 316-20 (each describing the place of the individual vis-a-vis society in Confucian thought).

²⁸ Moreover, reverence for the philosophy of the ancients helped create an isolationist attitude that prevailed for many centuries until the onset of intrusions from the West, which began in the seventeenth century and greatly increased in the eighteenth and nineteenth centuries. The Chinese, believing that their societal structure and norms could not be improved, were quite unresponsive to ideas from outside. This same attitude probably accounts largely for the fact that the many ingenious Chinese inventions were not disseminated beyond China; those inventions finding their way to the West did so through extraction by Western visitors and not dispersion by the Chinese themselves. With respect to commerce, however, Chinese responses to Western overtures changed from totally unwelcome to mixed during the eighteenth and nineteenth centuries. See ALFORD, *supra* note 10, at 30-31.

²⁹ See VOLTI, *supra* note 25, at 20-21.

ety—that products of the individual mind belong to society rather than the individual—would extend only to literary products and not to physical ones.

The prevailing attitudes of the intellectual elite also may explain an extraordinary phenomenon. Although Chinese civilization dominated the world in technology for many hundreds of years, it ultimately fell far behind during the fifteenth century as technological advancement all but ceased in China while it began to flourish in the West. Astonishingly, the Chinese elite's dominating influence on thought, with its disdain for the practical, astonishingly led an entire nation to lose interest in technology.³⁰ It is unsurprising then that as patent laws began to emerge in the West during the Renaissance no similar laws or even moral strictures developed in China.³¹

3. INITIAL ATTEMPTS TO INTRODUCE PATENT PROTECTION

After much resistance, China began to engage in significant foreign trade during the mid-eighteenth century. As trade increased, foreign businesses and their home countries' governments came to exert an accelerating amount of influence over Chinese affairs. Beginning early in the nineteenth century, China lost many aspects of its sovereignty to foreign powers after a series of wars, which the Chinese were doomed to lose because they had little in the way of military defense.³² The most well-known conflict with a foreign power was the infamous Opium War in 1839-1842.³³ These losses led to the imposition of a number of "trea-

³⁰ See *id.* at 21-22.

³¹ The Republic of Venice generally is credited with creating the first regularized patent system in 1474. See, e.g., Giulio Mandich, *Venetian Patents (1450-1550)*, 30 J. PAT. OFF. SOC'Y 166, 168-69 (1948); F. D. Prager, *A History of Intellectual Property from 1545 to 1787*, 26 J. PAT. OFF. SOC'Y 711, 712-15 (1944). However, similar developments occurred contemporaneously in Genoa and Florence. See F.D. Prager, *The Early Growth and Influence of Intellectual Property*, 34 J. PAT. OFF. SOC'Y 106, 130-33 (1952).

³² See LOC, CHINA—A COUNTRY STUDY, *supra* note 18, at 22-29.

³³ The Opium War resulted from British purchases of opium and other products from India, which the British then used for barter in China. The Chinese continually condemned and outlawed the importation and use of opium. When one Chinese leader seized and destroyed many tons of British opium at a Chinese port, the British declared war and unsurprisingly won. Out of the opium war came far more British and other foreign influence in China (in addition to the ceding of Hong Kong to the British). See *id.* at 22-23.

ties" on China that granted numerous trade concessions to foreign powers.³⁴

Moreover, China suffered from much internal strife during this period that attracted even more foreign military involvement and consequent foreign influence. Internal strife, catalyzed mainly by popular dissatisfaction with rising foreign encroachments and by the rapid decay of Qing, the last imperial dynasty, ironically brought even more foreign involvement because the Chinese government was able to quell internal uprisings primarily due to foreign military assistance. The best known of these events is the Boxer Rebellion in 1900, which actually resulted from imperial reform efforts attempted much too late to be effective, and which prompted a revolt by those content with the status quo.³⁵ Although the cause of the Boxer Rebellion was the opposite of other uprisings, the resulting increase in foreign influence was the same. A by-product of the Boxer Rebellion and other instances of domestic rebellion was a far greater volume of imports into China.³⁶ This, in turn, precipitated increasing concern by foreign entities and governments about protecting the intellectual property associated with products exported to China.³⁷

The resulting intellectual property agreements were not really tested until the last two decades of the nineteenth century. The first real intellectual property controversies concerned trademarks, as Chinese merchants began to use British trademarks in a fashion that constituted infringement in the Western mind, al-

³⁴ See William Beaumont, *The New Patent Law of the People's Republic of China (PRC): Evidence of a Second Chinese "Renaissance"?*, 27 IDEA 39, 43 (1986).

³⁵ In 1898, the Qing emperor finally instituted a series of reforms aimed at making sweeping social and institutional changes. The reforms covered a broad range of subjects, including stamping out corruption, and remaking the civil service system, legal system, defense establishment, and postal service. Opposition to these reforms was intense among conservative groups, notably among the group popularly known as the "Boxers." Their rebellion was crushed by the Chinese, but only with the help of foreign military forces, leading to yet more concessions to and influence by foreign nations, including the United States. See LOC, CHINA—A COUNTRY STUDY, *supra* note 18, at 28-29.

³⁶ See ALFORD, *supra* note 10, at 32-34; Tiefenbrun, *supra* note 8, at 11 (documenting the rise of exports and Western trade in China in the late nineteenth century).

³⁷ See ALFORD, *supra* note 10, at 32-34.

though the Chinese themselves were unlikely to have had any corresponding mental conception.³⁸

Of the various treaties over the last few centuries between China and the United States, Britain, and Japan, only the 1903 treaty with the United States dealt with the development of a Chinese patent system.³⁹ The terms of the treaty called for China to grant a limited term of patent protection to all American citizens holding U.S. patents, assuming the product to be protected was lawful to sell in China and did not copy previous inventions of Chinese nationals.⁴⁰ Because these treaty provisions ultimately proved ineffective, the direction that full implementation might have taken is unknown.

The last imperial dynasty finally fell in the 1911 Republican Revolution that unsurprisingly led to a national governance structure bearing scant resemblance to a true republic.⁴¹ In 1912, the Chinese government adopted a patent law providing protection only for the inventions of Chinese nationals. Over the next 30 years, fewer than one thousand patents were granted to Chinese subjects.⁴² Confucian thought still had a meaningful influence on individual and government behavior at this time, although a decrepit legal and administrative structure was at least as much to blame for the failure of this weak effort.⁴³ It was not until 1923 that the patent protection afforded Chinese subjects in 1912 was extended to American patent holders as China had promised in 1903.⁴⁴ This amendment failed as well because of the usual absence of meaningful implementation efforts, and it was observed in 1924 by an American diplomat in China that Chinese infringement of U.S. patents was widespread.⁴⁵

³⁸ See Tiefenbrun, *supra* note 8, at 11.

³⁹ See ALFORD, *supra* note 10, at 37.

⁴⁰ The 1903 Sino-U.S. treaty also covered copyrights, specifying that Chinese nationals would enjoy the protection of U.S. copyright law to the same extent that China had agreed to protect U.S. copyrights. The vagueness and lack of implementation measures of the copyright and trademark provisions rendered them virtually impotent. See *id.* at 38.

⁴¹ See LOC, CHINA—A COUNTRY STUDY, *supra* note 18, at 29-30.

⁴² See ALFORD, *supra* note 10, at 41-42.

⁴³ See Barron, *supra* note 26, at 322-24.

⁴⁴ See ALFORD, *supra* note 10, at 41-42.

⁴⁵ See NORMAN ALLMAN, TRADEMARK PROTECTION 96 (1924), cited in ALFORD, *supra* note 10, at 43 (discussing several forms of intellectual property). One must realize that a patent system and even an operable legal system, were

After almost two decades of factionalism, the Guomindang party gained power in 1928.⁴⁶ The Guomindang enacted a copyright law in 1928 that was patterned after Germany's but with evident Japanese influences.⁴⁷ The law did little to protect works of foreign origin.⁴⁸ A trademark law followed in 1930, and a patent law in 1932.⁴⁹ Like the 1912 statute, the 1932 patent law provided protection for inventions of Chinese nationals but not for foreign inventors, even if the latter held a U.S. or other foreign-origin patent.⁵⁰ It is notable that after several decades of neglect, Chinese science enjoyed a significant renaissance during the 1920s and 1930s.⁵¹ Because of the patent system's almost complete ineffectuality, one cannot know whether the scientific renewal generated potentially patentable inventions. Civil conflict between 1937 and World War II, followed by Japanese domination during the war, stifled the nascent resurgence of scientific and technical learning.⁵²

It is well-known that fighting between Communists and Nationalists intensified in the 1945-1949 period. In what can only be characterized as a true oddity, shortly before losing to the Communists and fleeing to Taiwan in 1949, the Nationalists enacted a sweeping law that not only extended the 1932 patent law to protect foreign-origin inventions, depending on reciprocity, but also adopted almost every type of patent provision in other nations' patent systems, with little attention to whether they fit into a cohesive whole.⁵³ Excluded from the definition of patentable sub-

without precedent in Chinese history. The Chinese seemed to equate formal enactment with actual implementation when the two are obviously creatures of quite different colors. A similar scene with a bizarre twist was played in several of China's provinces, where patent laws were enacted for provincial residents; these so-called patents, however, granted rewards to those who successfully imitated foreign inventions and put them to use in the province. See *id.*

⁴⁶ See ALFORD, *supra* note 10, at 50.

⁴⁷ See *id.*

⁴⁸ See *id.* at 50-51.

⁴⁹ See *id.* at 51-52.

⁵⁰ As in the past, despite any merits of the patent law itself, its effective operability was essentially foreclosed by an antiquated legal system in general, and by a legal system completely incapable of dealing with patents in particular. See *id.* at 50-53.

⁵¹ See LOC, CHINA— A COUNTRY STUDY, *supra* note 18, at 376-77.

⁵² See *id.*

⁵³ See ALFORD, *supra* note 10, at 52.

ject matter were chemicals, food, and pharmaceuticals; these exclusions were carried over to China's first truly modern patent law in 1985 and were not removed until the 1993 amendments.⁵⁴ The 1949 patent act, like those preceding it, was adopted either on the mistaken assumption that there was an underlying administrative and legal structure to make it work, or with little awareness that such a foundation was essential.⁵⁵ Thus, there would have been no change in actual practice even if the Communists had not taken control of mainland China shortly after the law was enacted.

Even prior to the Communist formation of the People's Republic of China (P.R.C.) in 1949, the Communists had for several decades created Soviet-like systems in the areas they controlled.⁵⁶ Thus, when the newly ensconced P.R.C. invalidated all Republican laws, it was a fairly logical and easy step for it to adopt intellectual property laws based on the Soviet model. Moreover, the Soviet socialist model comported with longstanding Confucian traditions that inventions and other creations were social activities, the results of which belonged to all members of society.⁵⁷ Part of the rationale for this attitude, both in Confucianism and later in communist socialism, was that all such inventions and creations drew heavily on a preexisting repository of knowledge.⁵⁸ While it is axiomatic that all inventions and other creations draw from the work of predecessors, the Western implementation of this notion has tended strongly toward encouraging and rewarding those who make meaningful, even if incremental, improvements to what has gone before them. The Chinese implementation of this axiom led to an essentially opposite result.

The P.R.C.'s initial efforts to create a patent system consisted of provisional regulations in 1950 adopting the Soviet "two-track" approach.⁵⁹ The law's "first track" discouraged creation of prop-

⁵⁴ See *id.* at 52, 72, 115.

⁵⁵ See *id.* at 53.

⁵⁶ See *id.* at 56; S. NAZRE-HYDER, TECHNOLOGY & SKILL FORMATION: THE CHINESE EXPERIENCE, 1953-75 2-3 (detailing the Soviet method of patent protection and the modifications made to it in China).

⁵⁷ See Harrington, *supra* note 7, at 341-42.

⁵⁸ See *id.*; Tiefenbrun, *supra* note 8, at 11.

⁵⁹ See NAZRE-HYDER, *supra* note 56, at 3-4. See generally David Ben Kay, Comment, *The Patent Law of the People's Republic of China in Perspective*, 33 UCLA L. REV. 331, 340-56 (1985) (describing the evolution of Chinese patent law).

erty ownership in the invention, but instead called for the award of "certificates of invention" to creators of notable inventions.⁶⁰ Such a certificate provided public recognition to the inventor and a modest monetary reward representing a percentage of production costs saved as a result of the invention's use over a one-year period.⁶¹ The government held ownership of the intangible property rights in the invention and the corresponding right to exploit and disseminate it.⁶² Chinese subjects inventing as part of their work for a state-owned enterprise, which characterized almost all inventors of the period, could receive no more than a certificate of invention.⁶³

The patent law's "second track" provided for issuance of a true patent to the inventor, carrying with it the right to receive royalties from the invention's use.⁶⁴ Only those inventing outside the course of their employment for a state-owned enterprise, those inventing within the few private enterprises (the number of which was rapidly declining at this time), and foreign nationals inventing on their own within China were eligible to receive such patents.⁶⁵ However, even those few inventions eligible for a patent were subject to state confiscation, entitling the inventor only to a certificate, if the government determined that the invention "concerned national security, or 'affected the welfare of the great majority of the people.'"⁶⁶ Thus, even those inventors who were eligible for a patent were unlikely to receive one if the invention was important.

Although the P.R.C.'s 1950 patent regulations were closely patterned after the Soviet Union's, the P.R.C.'s motives in adopting the two-track system were different. The Soviets held out the possibility, although a rather remote one, of true patent protection in order to assuage the fears of multinational companies upon whom it depended for trade and generation of hard cur-

⁶⁰ See ALFORD, *supra* note 10, at 57-58; Kay, *supra* note 59, at 340-56.

⁶¹ See ALFORD, *supra* note 10, at 57; Kay, *supra* note 59, at 346.

⁶² See ALFORD, *supra* note 10, at 57-58.

⁶³ See *id.* at 58.

⁶⁴ See *id.*

⁶⁵ See *id.*

⁶⁶ *Id.*; see also Barron, *supra* note 26, at 326; Beaumont, *supra* note 34, at 45. See generally Kay, *supra* note 59, at 340-56. Each of these authorities outlines the situations in which only a certificate of inventorship was available to the inventor.

rency.⁶⁷ The Chinese, on the other hand, held out the similarly remote possibility of receiving a real patent in order to placate intellectuals and those still holding large property interests because the P.R.C.'s infant government viewed their participation as necessary to rebuild the country internally.⁶⁸ Needless to say, the P.R.C.'s early effort did not produce anything approaching a workable patent system.

Unsurprisingly, the P.R.C.'s 1950 patent regulations did not create enthusiasm among those in the scientific and engineering communities. Even with an improved reward structure for recipients of inventors' certificates in 1954, by 1958 the P.R.C. patent law had produced but six certificates and four patents.⁶⁹ Political fermentation in the late 1950s and early 1960s, including the Anti-Rightist Movement in 1957 and the Great Leap Forward in 1958-60, produced rather quickly a poisonous atmosphere not only for those favoring a workable patent system but also for all of Chinese scientific and inventive enterprise.⁷⁰ These precursors of the scientifically devastating Cultural Revolution of 1966-1976 began to cast all intellectuals, including scientists and inventors, as subversive to the cause of communist socialism.⁷¹ The use of material incentives to encourage inventive and creative efforts was rejected in 1962, and scientists and other intellectuals were condemned for emphasizing professional development over the ideals of the Communist Party.⁷² No patents or invention certificates were issued in the 1958-1963 period.⁷³ In 1963, the communist government dumped patents and other rewards for invention into

⁶⁷ See ALFORD, *supra* note 10, at 58; Kay, *supra* note 59, at 343-44.

⁶⁸ One noteworthy characteristic of the early P.R.C. efforts to recognize intellectual property is that the new government placed much greater emphasis on inventions and technology than on trademark and copyright. The reverse had been true of late-imperial and republican efforts. See generally ALFORD, *supra* note 10, at 50-51, 58-59 (discussing how the first intellectual property law passed by the Guomindang was the copyright law, while under the 1950 regulations "relatively greater attention [was] focused on inventions").

⁶⁹ See ALFORD, *supra* note 10, at 61.

⁷⁰ See Mark Sidel, *Copyright, Trademark and Patent Law in the People's Republic of China*, 21 TEX. INT'L L.J. 259, 263 (1986).

⁷¹ See *id.* at 263-64.

⁷² See John Wong, *Appropriate Technology and Development*, ERC OCCASIONAL PAPER SERIES 9 (1980).

⁷³ See ALFORD, *supra* note 10, at 62.

a landfill of progressive ideas where they remained for the next twenty years.⁷⁴

The environment for science and technology degenerated rapidly. During the infamous Cultural Revolution of 1966-1976, various rationales were espoused to denigrate the work of scientists, inventors, creators, and intellectuals in general. Because they were considered a subversive element, they had to abandon their careers to engage in agricultural work and other physical tasks for which they were untrained and totally unsuited.⁷⁵ Science, engineering, and most other intellectual inquiries came to a standstill, and what was left of the nation's legal system was destroyed, causing negative repercussions that are yet to be fully rectified. Although the arrest and conviction of the so-called "Gang of Four" in 1976 marked the official termination of the Cultural Revolution, real change was a gradual process that actually began a few years prior to 1976.⁷⁶

4. ECONOMIC AND INTELLECTUAL PROPERTY DEVELOPMENTS FROM THE BEGINNINGS OF POST-MAO REFORM TO CHINA'S FIRST MODERN PATENT LAW

Chinese leaders following Mao's demise evidenced not only greater foresight but also greater pragmatism in their vision of China's economic future. They viewed scientific and technological advancement as crucial to the building of a modern economy that could recognize individual achievements to the greatest extent possible without undermining socialism's fundamental tenets.⁷⁷ These leaders targeted as high priorities the redevelopment of higher education, the all-but-destroyed legal system, intellectual property, and intellectual pursuits in general.⁷⁸ In 1978, the post-

⁷⁴ See Sidel, *supra* note 70, at 280-82.

⁷⁵ See NAZRE-HYDER, *supra* note 56, at 10; Kay, *supra* note 59, at 350.

⁷⁶ See Sidel, *supra* note 70, at 264 (noting that although the Cultural Revolution generally is thought to have extended to 1976, the year of Mao Zedong's death, it actually began to fracture before then because there were other Chinese leaders, such as Zhou Enlai and Deng Xiaoping, with far greater acuity than Mao who had begun to take power from him in the 1970s as his health deteriorated); Kay, *supra* note 59, at 351 (detailing the death of Mao Zedong and the end of the Cultural Revolution).

⁷⁷ See Sidel, *supra* note 70, at 281.

⁷⁸ See ALFORD, *supra* note 10, at 65.

Mao P.R.C. reinstated formal honors and pecuniary rewards for technological achievement.⁷⁹

Beginning in the late 1970s and continuing through the 1980s, China's leaders recognized as a first principle that an economy based even partly on market principles required significant decentralization of economic decision making.⁸⁰ Leaders of this era also understood that fundamental contract, property, and similar laws were necessary for a market economy or a mixed market-socialist economy to function. P.R.C. functionaries of this period debated and ultimately enacted a large body of law and implemented regulations with the aim of creating a legal system that would support an economy based on market incentives while retaining the basic principles of socialism.⁸¹ Accomplishing such a feat is self-evidently difficult. The main results of these efforts were a new constitution in 1982 and a great deal of economic legislation aimed at assuaging foreign business fears and thus attracting greater foreign investment.⁸²

One of the most intense debates during the late 1970s and early 1980s concerned patent legislation. Opponents viewed the creation of private property rights in inventions as fundamentally polar to the ideals of socialism.⁸³ Proponents observed that approximately 130 nations had comprehensive patent laws, including all nations viewed as more prosperous than China.⁸⁴ Ultimately, movement toward an effective patent system required the continued encouragement of Deng Xiaoping himself.⁸⁵ Deng and other proponents argued that creation of a patent system would

⁷⁹ See *id.*

⁸⁰ See, e.g., Donald C. Clarke, *Regulation and Its Discontents: Understanding Economic Law in China*, 28 STAN. J. INT'L L. 283, 285-86 (1992); Robb M. LaKritz, Comment, *Taming a 5,000 Year-Old Dragon: Toward a Theory of Legal Development in Post-Mao China*, 11 EMORY INT'L L. REV. 237, 256 (1997); Mark C. Lewis, *Contract Law in the People's Republic of China—Rule or Tool: Can the PRC's Foreign Economic Contract Law be Administered According to the Rule of Law?*, 30 VAND. J. TRANSNAT'L L. 495, 503 (1997).

⁸¹ See Sidel, *supra* note 70, at 281.

⁸² See *id.* at 282.

⁸³ See Tiefenbrun, *supra* note 8, at 18.

⁸⁴ Lulin, *supra* note 4, at 9 (noting that, at the time of his writing, more than 100 countries were signatories to the Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS"), nearly 30 others complied with its provisions, and these countries together accounted for over 90% of world trade volume).

⁸⁵ See ALFORD, *supra* note 10, at 69.

(1) assuage foreign fears and thus encourage foreign investment in China, including the creation of a climate that would bring more foreign technology into China, (2) provide an additional stimulus to new scientific and engineering research within China, which had already been targeted as one of the keys to modernizing China's economy, (3) encourage more exchanges of science and technology information among Chinese researchers because patents would be published and made systematically accessible, and (4) open up possibilities for China's membership in several international organizations, such as the United Nations' World Intellectual Property Organization ("WIPO"), that could bring many side-benefits to the nation.⁸⁶

Under Deng Xiaoping's direction, a patent law drafting committee began an exceptionally thorough three-year effort to learn as much as possible about the world's patent systems. Many Chinese, especially those with technical education, were sent to study the patent systems of developed nations such as the United States, Japan, and West Germany, and even to some socialist countries considered by China to be prosperous such as Yugoslavia.⁸⁷ The drafting committee also acquired and translated the patent laws of more than thirty countries.⁸⁸ After almost two dozen drafts, the committee presented to the People's Congress proposed legislation for a patent system based largely on the German model. Once in the People's Congress, it was substantially amended before enactment by those with little of the knowledge or experience of those on the drafting committee.⁸⁹

The 1985 Chinese patent law and accompanying regulations that emerged from this process embodied the almost universal patentability requirements of utility, novelty, and inventiveness ("nonobviousness" in the United States).⁹⁰ It also recognized the distinction observed in many nations between regular patents ("utility patents" in the United States and "invention patents" in

⁸⁶ See *id.*

⁸⁷ See *id.*; see also Harrington, *supra* note 7, at 345.

⁸⁸ See ALFORD, *supra* note 10, at 69.

⁸⁹ See Tiefenbrun, *supra* note 8, at 17.

⁹⁰ See Kay, *supra* note 59, at 352-53, 360. The non-obviousness requirement in U.S. patent law is found at 35 U.S.C. § 103 (1994).

China), and "utility models," which are a form of petty-patent not recognized in the United States.⁹¹

Several intrinsic problems rendered the 1985 patent law largely illusory. One problem is that it clearly favored foreign entities over Chinese subjects.⁹² For example, Chinese subjects could apply for patents only if they produced the invention either completely on their own or while working for a non-state-owned enterprise, which effectively precluded all Chinese subjects from eligibility at the time.⁹³ Thus, they were eligible only for utility models and relatively modest monetary rewards, hardly the incentive structure envisioned by Deng.⁹⁴

While the 1985 law clearly gave the advantage to foreign entities in receiving invention patents, it also made many empty promises to all, including foreigners. For example, its fifteen-year term, counted from the first priority filing date, disadvantaged not only Chinese subjects, who had limited access to the trained professionals necessary to institute the patent application process, but also foreign entities, who had to deal with foreign application priority dates, translation costs, and the severely underdeveloped Chinese patent administrative structure.⁹⁵

Additionally, the 1985 law's substantive coverage was deficient in several respects when compared with international patent norms. Foremost among these deficiencies was the law's exclusion of chemicals, pharmaceuticals, and most agricultural products from the definition of patentable subject matter.⁹⁶ These ex-

⁹¹ The United States does not recognize utility models, or "petty-patents" as they are characterized in some countries. Such grants generally apply to relatively minor improvement on current technology. They are not examined in the relevant patent office for novelty and nonobviousness (or "inventiveness"), but are subjected to only a facial examination to ensure that the application and other relevant filing documents meet statutory requirements. That is, it is simply a registration process similar to copyright registration. A number of highly developed nations, including Japan and Germany, do recognize utility models. See *id.* at 361-62.

⁹² See *id.* at 359.

⁹³ See Beaumont, *supra* note 34, at 48.

⁹⁴ See *id.*

⁹⁵ See Sidel, *supra* note 70, at 285-86.

⁹⁶ See *id.* at 283-84 (explaining that under the 1985 patent law food, beverages, flavorings, and animal and plant varieties were not patentable, whereas microorganisms and "processes used in producing" them were patentable). Pharmaceuticals and processes were excluded from the 1984 law and then included in the 1992 amendments. See Kay, *supra* note 59, at 364; J. Michael

clusions directly disadvantaged foreign patent holders because scientists achieving patentable innovations in these areas were working in many countries, but certainly not in China.⁹⁷ The Chinese and their economy suffered from these exclusions as well, although somewhat less directly. If foreign patent owners could not receive protection in China, the Chinese had little or no lawful access to products in these categories.

At least as important as the substantive deficiencies in the 1985 law was the continuing absence of an adequate administrative and legal structure to implement and enforce it. One must keep in mind that China is a country without a tradition of governance by law; its comprehensive attempts to create a formal legal system and laws governing commerce began only in 1979.⁹⁸ There were few lawyers, few judges with adequate training, and few people in the patent area with both technical and patent law knowledge to make a modern patent system operable.⁹⁹ Although significant progress is being made, this systemic problem continues to plague Chinese modernization efforts today.¹⁰⁰

5. TODAY'S CHINESE PATENT SYSTEM

Despite initial positive reactions to the enactment of the 1985 patent law, U.S. companies trying to enter the Chinese market quickly recognized its many problems and continually voiced their concerns during the next several years. Hearing and verifying their concerns, the U.S. government communicated to the P.R.C. its dissatisfaction with the state of patent and other intellectual property protection for U.S. entities doing business with China.¹⁰¹ In 1991, after negotiations with China failed to produce

Warner & Han Xiaoqing, *The Chinese System of Administrative Protection For Pharmaceuticals*, 31 J. MARSHALL L. REV. 1165, 1168 (1998).

⁹⁷ See generally Warner & Xiaoqing, *supra* note 96, at 1168.

⁹⁸ See Barron, *supra* note 26, at 328.

⁹⁹ See *Intellectual Property Rights: China's Stance Toward Protection*, BEIJING REV., Jan. 16-22, 1995, at 8 (interviewing Song Jian, State Councilor and Minister of the State Science and Technology Commission of China, who noted that Chinese protection began later than other countries but that in the last few years the judicial and law enforcement system has been enhanced in an effort to secure implementation of the laws).

¹⁰⁰ See *infra* Section 6.5.

¹⁰¹ U.S. trade officials estimated that the total annual loss because of Chinese industrial piracy and patent infringement had reached nearly \$400 million by 1991. See Harrington, *supra* note 7, at 357.

an accord satisfactory to the United States, the U.S. Trade Representative threatened China with the imposition of increased duties on \$1.5 billion worth of Chinese imports to the United States.¹⁰² These negotiations led to a 1992 Sino-American Memorandum of Understanding ("MOU").¹⁰³ In the MOU, China committed itself not only to a number of substantive patent law changes, but also to the creation of an administrative and legal structure for the examination and enforcement of patents, using decision-makers with both relevant technical and patent law knowledge.¹⁰⁴ The MOU led to substantial amendments to China's patent law, which became effective on January 1, 1993.¹⁰⁵

As noted, the 1985 patent act and its 1993 amendments are based primarily on the German model. Therefore, the Chinese Patent Law reflects European patent systems more than the American system. Despite the movement toward market economics, the Chinese economy still remains under ultimate state control, and thus China's patent law diverges in some respects from both European and American models in order to accommodate its peculiar economic context.¹⁰⁶ Several of the key features of the Chinese system after the 1993 amendments are listed and briefly discussed below.

(1) Like all the world's patent laws, except for those of the United States, priority between two individuals or entities both contending that they are entitled to a patent on the same invention depends on who first files a patent application.¹⁰⁷ The United States retains its first-to-invent priority system.¹⁰⁸ How-

¹⁰² See *id.* at 358. The U.S. Trade Representative acted under authority granted in the Omnibus Trade and Competitiveness Act of 1988, which, *inter alia*, amended the 1974 Trade Act. See Pub. L. No. 100-418, 102 Stat. 1107 (1988) (codified as amended at 19 U.S.C. §§ 2411-2420 (1994)).

¹⁰³ Memorandum of Understanding on the Protection of Intellectual Property, Jan. 17, 1992, U.S.-P.R.C., 34 I.L.M. 676 [hereinafter 1992 MOU].

¹⁰⁴ See Harrington, *supra* note 7, at 358.

¹⁰⁵ See *id.* at 359.

¹⁰⁶ See, e.g., P.R.C. Patent Law, *supra* note 2, art. 10 (stating that a Chinese patent cannot be assigned to a foreign entity without approval by the Chinese government).

¹⁰⁷ See *id.* art. 9. See generally Gao Lulin, *On the Revision of the Current Patent Law in China*, CHINA PAT. & TRADEMARK Q., Oct. 1992, at 7; Ross J. Oehler, *Patent Law In The People's Republic of China: A Primer*, 8 N.Y.L. SCH. J. INT'L & COMP. L. 451, 458-59 (1987) (outlining priority rights granted to holders of foreign applications for inventions and designs).

¹⁰⁸ See 35 U.S.C. § 102(g) (1994).

ever, in the U.S. system the first inventor to file has such a major advantage over one who claims that he was actually the first to invent, although not the first to file, that our priority system closely approaches a *de facto* first-to-file praxis.¹⁰⁹

(2) Chemical, pharmaceutical, and agricultural products generally became patentable in 1993.¹¹⁰ The 1985 law's exclusion of these classes of inventions had been a serious concern of the United States that was addressed in the 1992 MOU.¹¹¹

(3) The term of protection for invention patents was extended from fifteen to twenty years from the date of filing, and the term for utility models and design patents was extended from five to ten years.¹¹² The new terms conform to international norms, al-

¹⁰⁹ When this type of conflict occurs, the United States Patent and Trademark Office ("USPTO") declares an "interference," which is an adversarial proceeding conducted by the USPTO Board of Patent Appeals and Interferences ("BPAI"). See 35 U.S.C. § 135 (1994). A discussion of patent interference practice is far beyond the scope of this article. Briefly, however, the first to file is called the senior party and the second to file, who also claims first invention, is the junior party. See 37 C.F.R. §1.601 (1998). Of the total number of patent applications filed annually in the USPTO, an extremely small percentage of them provoke interferences, and of those, the junior party wins an extremely small percentage of the time. The junior party can cause the USPTO to declare an interference and seek to overcome its junior status in several different ways. See *id.* The upshot of all of this, however, is that an interference is declared in a tiny percentage of applications filed with the USPTO, and junior parties win interferences a tiny percentage of the times they are declared. Thus, although one should not make too much of the fact that the United States is alone in the world in having a first-to-invent system, a number of people who should know better do make much of it. See Li Cang, *The Similarities and Dissimilarities Between the Patent Laws of PRC & USA*, CHINA PAT. & TRADEMARK Q., July 1987, at 32, 33 (discussing advantages of filing first in the United States); *Franklin Pierce Law Center's Sixth Biennial Patent System Major Problems Conference*, 37 IDEA 623, 673 (1997) (observing that interferences are rarely declared and when declared, they are rarely won by the junior party).

Moreover, in addition to giving the advantage in an interference to the first filer, U.S. patent law includes many other provisions that make it very important for an inventor to file an application as early as possible. These provisions are found primarily in 35 U.S.C. §§ 102(a) (relating to novelty), 102(b) (relating to the so-called "statutory bars" caused by making a public use of the invention or placing it on sale more than one year before filing the application), and 103 (relating to the requirement that the invention must have been non-obvious to an ordinarily skilled person in the relevant area of expertise at the time of invention).

¹¹⁰ See P.R.C. Patent Law, *supra* note 2, art. 25 (excluding chemicals, pharmaceuticals, and agricultural products from list of patentable subject matter).

¹¹¹ See Warner & Xiaoqing, *supra* note 96, at 1169-71.

¹¹² See P.R.C. Patent Law, *supra* note 2, art. 45; Lulin, *supra* note 107, at 9.

though at that time and until 1995, the United States retained its longstanding term of seventeen years from the time the patent was granted.¹¹³ TRIPS¹¹⁴ accompanied the 1994 Uruguay Round of GATT negotiations mandates at least a twenty-year term for invention patents and ten-year terms for utility models and design patents.¹¹⁵ Although China is not a member of the WTO created by the Uruguay Round, it clearly wishes to be; this desire is demonstrated by its change to a twenty-year patent term well before the conclusion of the Uruguay Round (and before the United States changed its patent term).

(4) As in most patent systems, Chinese law after 1993 provides for publication of the patent application eighteen months after filing.¹¹⁶ Under the 1985 act, the Chinese Patent Office ("CPO") could publish the application at any time during the eighteen-month period after filing, thus giving the applicant no assurance that the contents of the application would remain secret after filing.¹¹⁷ Today, there is such assurance of confidentiality during the eighteen months after filing.¹¹⁸ The United States is one of the world's few nations that does not publish patent applications; publication occurs only after the patent issues.¹¹⁹ There currently is serious debate, including proposed legislation, regarding the institution of an eighteen-month patent application publication in the United States. However, the issue is mainly important in the United States to independent inventors and small businesses who do not plan to file for patents in other nations.¹²⁰

¹¹³ Effective June 8, 1995, the U.S. patent term changed to the international norm of 20 years from the first U.S. filing date. See 35 U.S.C. § 154(a)(2) (1994); see also Lulin, *supra* note 107, at 9.

¹¹⁴ Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization [hereinafter WTO Agreement], Annex 1C, LEGAL INSTRUMENTS—RESULTS OF THE URUGUAY ROUND vol. 31; 33 I.L.M. 1125, 1197 (1994) [hereinafter TRIPS Agreement].

¹¹⁵ See *id.* arts. 33, 38.

¹¹⁶ See Harrington, *supra* note 7, at 365.

¹¹⁷ See MICHAEL PENDLETON, INTELLECTUAL PROPERTY LAW IN THE PEOPLE'S REPUBLIC OF CHINA 32 (1986).

¹¹⁸ See Harrington, *supra* note 7, at 365.

¹¹⁹ See Cang, *supra* note 109, at 33.

¹²⁰ See *id.* As of this writing, however, the latest legislative proposal in Congress for changing the U.S. patent system in several ways aims to require publication of applications for U.S. patents 18 months after filing only for

Larger entities or individuals seeking additional patent protection in nations outside the United States must realize that their patent applications will be published in those other countries eighteen months after filing.¹²¹ Thus, U.S. patent applicants who intend to also seek foreign patents already face eighteen-month publications. A change in U.S. practice, however, would mean that a competitor or other party interested in the content of a U.S. patent application published eighteen months after filing would immediately have access to it in English, rather than being faced with the time and expense of translating after its publication in another country such as Japan, Germany, or France. One could argue, then, that the United States' emulation of China's and other nations' eighteen-month application publication system would enable U.S. companies to gain quicker access to technical innovations in non-English speaking countries.

(5) The 1993 amendments eliminated the pre-grant opposition procedure that unduly delayed patent issuance and thus diminished the term of protection. Like its U.S. counterpart, the new law requires that the patent be issued upon favorable completion of the substantive examination process.¹²² Within six months of issuance, anyone wishing to challenge the validity of the patent may do so in an administrative proceeding before the CPO.¹²³ After six months, challengers instituting post-grant oppositions must do so before China's Patent Reexamination Board.¹²⁴

(6) In American patent law, inventors enjoy a one-year "grace period," which essentially means that once the complete invention has been either (a) publicly disclosed or used (which includes almost any non-secret disclosure or use) or (b) offered for sale by either the inventor or someone else, a patent application must be filed within one year or the right to patent is lost.¹²⁵ China, however, has followed the model found in almost all other nations.

those also filed in a foreign country. See H.R. 1907, 106th Cong., 1st Sess. §§ 402-08 (1999).

¹²¹ See *id.*

¹²² See P.R.C. Patent Law, *supra* note 2, art. 39; see also Harrington, *supra* note 7, at 366.

¹²³ See P.R.C. Patent Law, *supra* note 2, art. 41; see also Harrington, *supra* note 7, at 366.

¹²⁴ See P.R.C. Patent Law, *supra* note 2, art. 48; see also Harrington, *supra* note 7, at 367.

¹²⁵ See 35 U.S.C. § 102(b) (1994); see also Cang, *supra* note 109, at 33.

Except for disclosure under specified exceptional circumstances, there is no grace period.¹²⁶ Thus, in most cases, a public use or disclosure of the invention or the act of placing it on sale before application immediately destroys the right to obtain a patent. This feature, which is the international norm, is often referred to as a requirement of "absolute novelty."¹²⁷

(7) In the United States, it is a common practice for a patent owner (especially a large company) to hold the patent without making, using, or selling the patented invention; instead, the patent owner will use the patent defensively, either alone to block rivals from practicing the specific technology or as part of a large patent portfolio to fence out rivals from an entire area of technology.¹²⁸ Similarly, a company holding a large patent portfolio may treat it as a dormant asset by sitting on it for several years, waiting for others to intentionally or unintentionally use some of its patented technology, threatening to file or actually filing an infringement suit, and settling by licensing and collecting royalties.¹²⁹ Patentees in the United States can do so because American

¹²⁶ See P.R.C. Patent Law, *supra* note 2, art. 24 (granting a six-month grace period if disclosure of the invention was made (1) by exhibiting it at a P.R.C.-sponsored international exhibition, (2) at a P.R.C.-approved academic or technological meeting, or (3) without the consent of the patent applicant, as in a situation where the technology was misappropriated while it was still a trade secret, then disclosed by the misappropriator); see also Cang, *supra* note 109, at 33.

¹²⁷ See *id.* at 33.

¹²⁸ See, e.g., F.M. SCHERER, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 451-52 (2d ed. 1980) (noting the problem of "defensive" patenting and its probable anti-competitive effects in the United States).

¹²⁹ Some companies, such as Texas Instruments and Motorola, have become true masters of this art, often generating more revenues from royalties on otherwise dormant patents than they generate from operations. IBM and other companies do likewise, although their operating revenues are so large that they are not outdistanced by royalty income. See Andrew M. Riddles et al., *Start-Up Companies Should Devise IP Strategies*, NAT'L L.J., Feb. 8, 1999, at C7; see also John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 189 & n.5, 237 & n.96 (inferring from several empirical findings, plus Wesley M. Cohen et al., *Appropriability Conditions and Why Firms Patent and Why They Do Not in the American Manufacturing Sector* (April 17-18, 1998) (unpublished manuscript, presented at the Stanford Workshop on Intellectual Property and Industry Competitive Standards, Stanford Law School), that patenting for defensive purposes is likely to be one of the primary factors motivating the increase in patenting activity, even as research and development executives see patenting as not being one of the best

patent law does not grant an affirmative right, but instead grants an exclusive right to the patentee to *exclude others* from making, using, selling, offering to sell, or importing the patented invention.¹³⁰ In most other countries, a patent owner, regardless of the nation of his or her domicile, cannot use his or her patent solely for defensive purposes. Instead, the owner typically must either put the patented invention into practice or license another to do so within a specified period of time or within a "reasonable time"; otherwise, the patentee can be compelled to grant nonexclusive reasonable-royalty licenses to other entities.¹³¹ Moreover, in the United States, one who obtains a patent on an improvement to an already-patented invention cannot make any use of the improvement patent without obtaining a license from the owner of the earlier, dominant patent.¹³² Although licensing, especially cross-licensing, is a very common way of resolving this type of blocking problem in the United States, it cannot be compelled.¹³³ The compulsory licensing provisions in most other patent systems also provide for compulsory licensing in this dominant-subservient patent scenario.¹³⁴ Again reflecting the hybridization resulting from an attempt to fit a modern patent system within the context of an emerging market economy that remains under ultimate state control, China's patent law provides for compulsory licensing in the two situations described but also includes an idiosyncrasy—its compulsory licensing provision can be triggered merely by another entity's denied request for a license on

means of appropriating returns on their companies' research and development investment).

¹³⁰ See 35 U.S.C. § 154(a)(1) (1994).

¹³¹ See, e.g., JAY DRATLER, JR., LICENSING OF INTELLECTUAL PROPERTY §§ 3.03[1][a], 3.03[2][a] (1999) (discussing that compulsory licensing for the "non-working" patent is common outside the United States, but the practical effect may not be great because these laws do not require the patentee to license also ancillary "know-how" that is often critical for a licensee's effective use of a patent).

¹³² See *id.*

¹³³ See *id.* § 6.05, at 6-55 (noting the common use in the United States of cross-licensing to resolve blocking-patent problems, and that in this situation the Antitrust Division of the Department of Justice views cross-licensing as pro-competitive).

¹³⁴ See, e.g., Mark F. Wachter, *Patent Enforcement in Japan: An American Perspective for Success*, 19 AIPLA Q.J. 59, 67 (1991) (observing that compulsory licensing is used to resolve the dominant-subservient patent blocking problem in the Japanese patent system).

reasonable terms as long as the requester can demonstrate the capability to exploit the patent.¹³⁵

(8) Like the majority of countries with developed patent systems,¹³⁶ the Chinese law recognizes “prior user rights” as a defense to patent infringement. In the United States, which does not recognize prior user rights, the following scenario may occur. An entity that first invented a patentable technology elects to use trade secret protection rather than seek a patent. This is an especially attractive alternative in the case of an internally used process, which is when the scenario normally arises. Another company later develops the same technology independently¹³⁷ and patents it. If the earlier inventor had used his or her technology in a non-secret manner, such use would bar the later inventor from acquiring a patent because the earlier non-secret use would be viewed as a “public use” constituting “prior art” that destroys the novelty of the later invention.¹³⁸ Because the first inventor kept its technology confidential, however, the later inventor may not only patent it but also may hold the earlier inventor liable for patent infringement or settle the infringement claim by forcing the earlier inventor to buy a license and pay royalties.¹³⁹ Unlike the United States, but like most other countries, China’s patent law recognizes prior user rights by giving the earlier inventor a defense against the later inventor’s infringement claim.¹⁴⁰

¹³⁵ See P.R.C. Patent Law, *supra* note 2, arts. 51 (the compulsory license), 56 (license is nonexclusive and nonassignable), 57 (requiring payment by licensee to patent owner of a reasonable royalty which, if not successfully negotiated, is set by CPO adjudication); see also Implementing Regulations of the Patent Law of the People’s Republic of China, arts. 68, 69, *reprinted in* 2 CHINA L. FOR FOREIGN BUS. (CCH) (1993) (providing more detail on license requester’s proof of ability to exploit the patent as a prerequisite to receiving a compulsory license) [hereinafter P.R.C. Patent Regulations].

¹³⁶ See, e.g., Keith M. Kupferschmid, *Prior User Rights: The Inventor’s Lottery Ticket*, 21 AIPLA Q.J. 213, 251-53 (1993) (analyzing prior user rights as of 1993 in 48 countries, finding that only 10 of the 48 had no provision for prior user rights—the United States was one of the 10 and continues to eschew prior user rights).

¹³⁷ The later inventor cannot obtain a patent if it learned of the technology from the earlier inventor or someone else. See 35 U.S.C. § 102(f) (1994) (stating that an applicant may not obtain a U.S. patent if “he did not himself invent the subject matter sought to be patented”).

¹³⁸ See 35 U.S.C. § 102(a) (1994).

¹³⁹ See Kupferschmid, *supra* note 136, at 219 n.17.

¹⁴⁰ See P.R.C. Patent Law, *supra* note 2, art. 62(3). Also, like other countries with prior user rights, China limits the defense to the scope of the earlier

(9) One rather unexpected move by the Chinese was that they adopted a requirement that exists in U.S. patent law but is rarely found in the rest of the world. A universal requirement in all patent laws is that the patent application include a sufficiently complete and precise written description, with drawings, that would enable one reasonably skilled in the area of technology ("the art") to make and use the invention without having to engage in undue experimentation beyond studying the description. This is generally referred to as the "enablement" requirement.¹⁴¹ In the same sentence in U.S. law, however, a clause imposes an additional disclosure obligation typically referred to as the "best mode" requirement. It provides that, in addition to fulfilling the enablement requirement that places the invention generally in the hands of the relevantly skilled portion of the public, the applicant also must disclose the "best mode contemplated by the inventor [at the time of application] of carrying out his invention."¹⁴² The term "mode" refers to a method of implementation, and the patent application obviously must disclose at least one mode for the disclosure to be enabling. The best mode requirement further requires that if, when the inventor filed the application, he or she had in mind a mode of implementation that was better than all other known alternatives (sometimes called the "preferred em-

inventor's use as of the time the later inventor files its patent application. See *id.* As with 18-month publication, recognition of prior user rights in the United States has been hotly debated for several years. The patent law revisions in recent years, as well as the current bill, call for institution in the United States of prior user rights (in the current bill, called "first inventor rights" in a politically astute semantic maneuver). See H.R. 1907, 106th Cong., 1st Sess. §§ 201-03 (1999). In an attempt at political compromise to salvage any kind of "patent reform" legislation, the bill now (as of late October 1999) has been amended so that the PUR or "first inventor rights" provision applies only to so-called "method-of-doing-business" software patents. *Id.*

Although prior user rights clearly have a number of both positive and negative aspects, the concept does seem to fit more logically within the first-to-file priority system employed by other nations than within the U.S. first-to-invent priority system. See Kupferschmid, *supra* note 136, at 215, 235-36. As previously noted, however, one should not make too much of the difference between first-to-invent and first-to-file because the first one to file in the United States usually wins any contest with another who filed second but claims to have invented first. See *supra* note 112 and accompanying text.

¹⁴¹ For the U.S. version of the enablement requirement, see 35 U.S.C. § 112, ¶ 1 (1994).

¹⁴² *Id.*

bodiment”), that mode has to be revealed.¹⁴³ Whenever a U.S. patent’s validity is challenged for failing to disclose the best mode, the court must first make a subjective inquiry—did the applicant actually contemplate a preferred embodiment?¹⁴⁴ If so, the court then must determine whether the best mode was described adequately—that is, was the description of the best mode “enabling”?¹⁴⁵

Chinese patent law itself does not include a best mode requirement, but the implementing regulations do. One can see clearly from the relative vagueness of the patent law, with a number of essential details omitted, and the far more complete nature of the regulations, that the two are supposed to work in tandem and that the latter is to be viewed as existing on the same legal plane as the former. The patent law’s implementation regulations incorporate a best mode disclosure requirement identical to that of the United States.¹⁴⁶

(10) In line with the general Chinese attitude toward dispute resolution (keeping disputes out of court if at all possible and emphasizing mediation, administrative resolution, and other non-litigation mechanisms), China’s 1985 patent law created administrative authorities for patent affairs.¹⁴⁷ This structure was not changed by the 1993 amendments. Although patent disputes may be taken to the People’s Court,¹⁴⁸ the large majority of them are resolved through mediation conducted by the administrative authorities.¹⁴⁹ Dispute resolution by mediation has long been the Oriental norm, Confucius himself having issued caveats about re-

¹⁴³ See, e.g., *Spectra-Physics v. Coherent, Inc.*, 827 F.2d 1524, 1535 (Fed. Cir. 1987).

¹⁴⁴ See Michael L. Leetzow et al., *1996 Patent Law Decisions of the Federal Circuit*, 46 AM. U. L. REV. 1675, 1719-21 (1997).

¹⁴⁵ See *id.*

¹⁴⁶ See P.R.C. Patent Regulations, *supra* note 135, art. 18(8) (stating that a patent application must “describe in detail the best mode contemplated by the applicant for carrying out the invention or utility model, with explanation by way of example in appropriate circumstances, and with references to the drawings, if any”).

¹⁴⁷ See *id.* arts. 76-77.

¹⁴⁸ See *id.* art. 77.

¹⁴⁹ See David Hill & Judith Evans, *Chinese Patent Law: Recent Changes Align China More Closely With Modern International Practice*, 27 GEO. WASH. J. INT’L L. & ECON. 359, 392 (1994).

sort to legalistic resolution mechanisms.¹⁵⁰ Such an attitude has much to commend it in many types of disputes, especially when compared with some American adversarial excesses.¹⁵¹ Although we should in no way discourage the Chinese from incorporating traditional non-adversarial methods into their developing legal system, which appropriately should be an East-West hybrid, major work needs to be done to bring the rule of law applied by well-trained judges and lawyers into that system.

6. RECENT EVIDENCE OF PROBLEMS AND PROGRESS

6.1. *U.S. Efforts Immediately After the 1995 MOU*

Despite the modernization of China's patent system, as late as 1995 some critics argued that the law's full implementation and its intended salutary effects remained largely unrealized.¹⁵² China had shown an inclination to keep much of its patent law separate from the Chinese domestic economic structure. As a consequence, the great majority of invention patent applications were filed by foreign entities, whereas the great majority of applications filed by Chinese subjects were only for utility models. Some have argued that a patent system is unlikely to be effective without much more development of the nation's general legal system, and others have contended that a workable patent system by itself will not assist in developing a market economy, as long as the Chinese have little political and personal freedom to pursue the advantages created by it.¹⁵³

Many problems with Chinese patent law undoubtedly remained after 1995. Most of the news Americans hear on the subject of intellectual property in a country like China focuses on

¹⁵⁰ See, e.g., THE WISDOM OF CONFUCIUS 198 (Lin Yutang ed. & trans., 1938) ("Confucius said 'In presiding over lawsuits, I'm as good as any man. The thing is to aim so that there should be no lawsuits.'").

¹⁵¹ See, e.g., John R. Allison, *The Context, Properties, and Constitutionality of Nonconsensual Arbitration: A Study of Four Systems*, 1990 J. DISP. RESOL. 1, 1-8.

¹⁵² See, e.g., Tiefenbrun, *supra* note 8; ALFORD, *supra* note 10 (concluding, along with Tiefenbrun, that American policy in regard to intellectual property law in China is misguided and has been ultimately unsuccessful despite numerous bilateral agreements).

¹⁵³ See ALFORD, *supra* note 10.

music, movie, and software copyright piracy¹⁵⁴ because it is more flagrant, visible, and of larger magnitude than patent infringement. Duplicating digital expressions is far easier and cheaper than replicating technology of even slight sophistication. Despite its lack of an American media blitz comparable to that provided for copyright piracy, patent protection needs much more work. Indeed, without even more aggressive Chinese patent enforce-

¹⁵⁴ Although software piracy traditionally implicated only copyrights, in the last several years patents have come to occupy a position in the protection of software making them at least as important as copyrights, if not more so. This development can be traced to two threads of U.S. federal court decisions. The first has greatly expanded patent protection for software inventions. See, e.g., *Diamond v. Diehr*, 450 U.S. 175 (1981) (opening the door modestly to software patents after a series of decisions finding algorithms not to be patentable subject matter by holding that an invention, patentable when viewed as a whole, is not rendered unpatentable subject matter because software is an integral part of the invention); *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999) (noting that pure software, though consisting of algorithms, is patentable subject matter as long as it produces a useful result—it does not have to accomplish a physical transformation); *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998) (recognizing not only that the algorithms comprising software can be patentable as a step-by-step process, but discarding the traditional view that the methods of doing business were not patentable subject matter); *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (marking the beginning point of modern software patent jurisprudence according to many, though still seemingly requiring very artful claim drafting to make the steps in software read as though they accomplish a physical transformation in a machine).

The second thread of U.S. federal court decisions has greatly reduced the scope of copyright protection for software. Copyright law now protects the code and some non-literal elements, but not the ideas incorporated in internal interfaces and other architectural software elements, which are more appropriate for patent protection. The first case manifesting this now almost universal view of the scope of copyright protection for software is *Computer Assoc. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992), which disavowed the approach taken by the Third Circuit six years earlier in *Whelan Assoc. v. Jaslow Dental Lab, Inc.*, 797 F.2d 1222 (3d Cir. 1986). See *Whelan*, 797 F.2d at 1222 (distinguishing between unprotectable ideas and protected expressions, beginning the analysis by setting the level of abstraction at far too high a level—the overall purpose of the program—which led to a conclusion that almost everything else was expression protected by copyright). The *Computer Associates* case began at a much lower level of abstraction—the subroutines in the program, leading to the result described above. Since 1992, every circuit court and district court to face the issue has adopted the *Computer Associates* rationale. In addition to several other recent decisions in the Second Circuit and numerous district court decisions, other courts of appeals confronting the issue have followed *Computer Associates*. See *Bateman v. Mnemonics, Inc.*, 79 F.3d 1532 (11th Cir. 1996); *Engineering Dynamics v. Structural Software*, 26 F.3d 1335 (5th Cir. 1994); *Trandes Corp. v. Guy F. Atkinson Co.*, 996 F.2d 655 (4th Cir. 1993); *Autoskill, Inc. v. National Educ. Support Sys.*, 994 F.2d 1335 (10th Cir. 1993).

ment efforts, as the Chinese increase their technological capabilities and thus their ability to replicate foreign technology, we can expect that patent infringement will receive similar American business and media attention.

Still unhappy with the P.R.C.'s progress in protecting intellectual property rights, in 1995 the U.S. Trade Representative once again threatened to impose huge U.S. import tariffs (100%) on \$1.8 billion worth of Chinese goods unless China rapidly made more progress in enforcing its laws and agreements.¹⁵⁵ A Sino-American trade war was narrowly averted again by the successful negotiation of another MOU in 1995. Instead of focusing on substantive patent and other intellectual property law, the 1995 MOU correctly focused on improvements to China's judicial and administrative institutions, China's efforts to educate the public about intellectual property protection, and a cooperative P.R.C.-United States program of continual communication and consultation regarding Chinese implementation of its commitments.¹⁵⁶ The 1995 MOU also focused on P.R.C. efforts to actively diminish the deleterious effects of "localism"—the disobedience by some city and provincial leaders of the P.R.C. central government's antipiracy dictates.¹⁵⁷

Rather unrealistically, Americans wanted improvement in China's patent, copyright, and trademark systems to occur with great rapidity. Thus, in May 1996, when the 1995 MOU was barely one year-old, the U.S. Trade Representative once again threatened China with trade sanctions. This dispute was resolved by yet another agreement in June 1996.¹⁵⁸ This latest agreement

¹⁵⁵ See Angela Mia Beam, *Piracy of American Intellectual Property in China*, 4 J. INT'L L. & PRAC. 335, 352-53 (1995); Jeffrey W. Berkman, *Intellectual Property Rights in the P.R.C.: Impediments to Protection and the Need for the Rule of Law*, 15 UCLA PAC. BASIN L.J. 1, 7 (1996).

¹⁵⁶ See Agreement Regarding Intellectual Property Rights, Feb. 26, 1995, P.R.C.-U.S., 34 I.L.M. 881.

¹⁵⁷ See *id.*; see also Berkman, *supra* note 155, at 16-20 (emphasizing the problem of localism as one of the key impediments to actual achievement of the P.R.C.'s patent, copyright, and trademark protection goals).

¹⁵⁸ See, e.g., Seth Faison, *U.S. and China Agree on Pact To Fight Piracy*, N.Y. TIMES, June 18, 1996, at A1. With this agreement, the United States was concerned primarily about perceived problems with access to certain important Chinese markets and only secondarily with intellectual property. See *Renewal of MFN Status for China: Hearing Before the Subcomm. on Trade of the House Comm. on Ways & Means*, 103d Cong. (1997) [hereinafter *Hearing*] (statement of Charlene Barshefsky, U.S. Trade Representative) in FED. NEWS SERV., June 17, 1997, available in LEXIS, Asiapc Library, Allnws File.

was reached so quickly because of a U.S. conviction, after investigation, that China was engaged in very proactive efforts to satisfy the concerns of the United States and other developed nations.¹⁵⁹

6.2. Overall Economic Conditions

Anyone questioning the P.R.C.'s commitment and sustained effort to modernize its economy through the use of market principles will find it hard to argue with the fact that the Chinese economy grew at an annual rate of about seven percent from the early 1980s to the mid-1990s¹⁶⁰ and at almost ten percent in 1996, just before East Asia as a whole fell into a regional depression.¹⁶¹ While the regional recession is largely attributable to serious economic problems in Japan, Korea, Malaysia, Indonesia, and the Philippines, it has negatively affected China because of China's still-disproportionate dependence on neighboring countries.¹⁶² These countries are very important to China because of their heavy investment in China and their demand for Chinese exports.¹⁶³ During the past two years, for example, foreign invest-

The United States is able to use threatened unilateral trade sanctions as a sword of Damocles over China, even after the Uruguay Round of GATT created the WTO, because China has not yet become a member of the WTO. Once China becomes a member, claims by the United States or other WTO members that China does not adequately protect intellectual property will constitute unfair international trade practice complaints, which must be submitted to the WTO for formal dispute resolution.

¹⁵⁹ See Faison, *supra* note 158; Hearing, *supra* note 158.

¹⁶⁰ See Mark C. Lewis, Note, *Contract Law in the People's Republic of China—Rule or Tool: Can the PRC's Foreign Economic Contract Law be Administered According to the Rule of Law?*, 30 VAND. J. TRANSNAT'L L. 495, 496 (1997) (discussing the international business community's recognition of China as a market power); *Development: Third World Growth Slow Over Last Decade*, INTER PRESS SERV., Dec. 30, 1995, available in LEXIS, Asiapc Library, Allnws File.

¹⁶¹ See The Science Coalition, *Trends in R&D—People's Republic of China* (visited June 15, 1999) <http://www.sciencecoalition.org/trends_china.htm> [hereinafter *Trends in R&D—People's Republic of China*]; *Chinese Statistics Bureau Releases 1996 Figures*, BBC SUMMARY OF WORLD BROADCASTS, Dec. 31, 1996, available in LEXIS, Asiapc Library, Allnws File.

¹⁶² See Brian Bremner, *Asia—How Real is the Recovery*, BUS. WK., May 3, 1999, at 56.

¹⁶³ See *China and India Compared*, BUS. LINE, Aug. 19, 1999, available in LEXIS, Country Reports, China Country Files. The other Asian nations have experienced recession largely because of antiquated banking systems and the failure to shut inefficient plants. See Bremner, *supra* note 162, at 57-58 (detailing ongoing efforts to reform plant inefficiencies in Korea and rescue Indone-

ment in the P.R.C. has dropped substantially, arguably for reasons having little or nothing to do with events within China.¹⁶⁴ Although substantial economic problems remain in these countries, the Asian recession seems to have bottomed out, and a recovery appears to have begun.¹⁶⁵ Moreover, by mid-1999, foreign investment in the P.R.C. was again on the upswing, particularly in its various cities, the 32 special economic zones,¹⁶⁶ and the autonomous regions where much of China's technological, manufacturing, and other forms of economic growth had been centered for several years.¹⁶⁷ The recovery of foreign investment in par-

sia's banking system). While China's banking system still needs further reforming, the P.R.C. has been very active in closing plants that engage in piracy. See *Hearing, supra* note 158, at 3. Moreover, there is mounting evidence that China is attacking its banking problems more aggressively than other East Asian countries. See *Profile—China Banking Industry—May 1999*, ASIA PULSE, May 20, 1999, available in LEXIS, Asiapc Library, Allnws File.

Although we speak of the recession as not being primarily a Chinese recession, some economists do argue that China might be close to its own recession if not for large spending on public works projects. A few of these experts view many of the P.R.C.'s public works projects as "dubious," but we do not know the criteria used to form this opinion, how many of the economists studying China hold it, or the strength with which it is held. See, e.g., Bremner, *supra* note 162, at 58. Moreover, short-term government capital spending is recognized as one of several tools to replace declining private investment and assuage the effects of recession. See, e.g., BELTON M. FLEISHER ET AL., PRINCIPLES OF ECON. 564-67 (1987).

¹⁶⁴ See, e.g., *Hearing, supra* note 158; *Foreign Investment in China Drops 12.6 Percent in January-April*, AGENCE FRANCE PRESSE, May 19, 1999, available in LEXIS, World Library, Allwld File.

¹⁶⁵ See, e.g., Owen Ullmann, et al., *Speed Up that Line!*, BUS. WK., May 17, 1999, at 40 (emphasizing rapid recovery of manufacturing sector in Asia, as well as other signs of regional economic recovery). In the past few months, there has appeared strong evidence that China's economy is regaining strength from internal growth more rapidly than other Asian nations. See Dexter Roberts et al., *China's New Revolution*, BUS. WK., Sept. 27, 1999, at 72 (providing evidence that the private sector, driven by an entrepreneurial spirit, is quietly, but rapidly replacing crumbling state businesses). Indeed, the authors note that when one looks at China's economic future, its reported economic growth rates may actually be understated because of the drag created by disappearing state-owned enterprises. See *id.*

¹⁶⁶ China created a small number of these SEZs only in coastal areas during the 1980s, but they have now expanded inland. See *China—Zones Vow to Attract More Funds*, CHINA DAILY, May 25, 1999, available in LEXIS, World Library, Allwld File.

¹⁶⁷ See, e.g., *China—More Foreign Funds in Guangzhou*, ASIAINFO DAILY CHINA NEWS, May 26, 1999, at 4, available in LEXIS, World Library, Allwld File; *Xinjiang Considered Popular Spot for Foreign Investment*, CHINA BUSINESS INFORMATION NETWORK, May 26, 1999, available in LEXIS, World Library,

ticular parts of China, despite declines in China as a whole, may simply indicate that foreign investors have become more selective.¹⁶⁸ With improvement in the regional Asian economy and Chinese economic modernization that has continued apace, Chinese economic growth may not only resume its large annual gains, but actually surpass them.¹⁶⁹ Although China has not regained its ten percent annual economic growth rate of 1996-97, by mid-1999 some reports indicated that it had recovered to eight percent¹⁷⁰ and seemed poised to attain its goal of annual economic growth of eight to nine percent through 2010.¹⁷¹

The annual political ritual in Washington concerning renewal of China's most-favored-nation trading status with the United States, which is essential to maintaining relatively open trade lanes between the two countries, occurred yet again in May of 1999, when President Clinton proposed continuation of that status.¹⁷² With recent allegations of Chinese espionage in U.S. defense laboratories, as well as the approaching congressional and presidential elections, many members of Congress have played to what they apparently perceive as nationalistic, and perhaps even xenophobic, feelings among their constituents and have opposed

Allwld File; see also *China Approves 4,925 More Foreign-Funded Businesses*, ASIA PULSE, May 27, 1999, available in LEXIS, World Library, Allwld File (indicating strong foreign investment in China).

¹⁶⁸ See *China—Zones Vow to Attract More Funds*, *supra* note 166 (detailing investor interest in China's development zones even during the Asian financial turmoil); see also *China—More Foreign Funds in Guangzhou*, *supra* note 167; *Xinjiang Considered Popular Spot for Foreign Investment*, *supra* note 167; *China Approves 4,925 More Foreign-Funded Businesses*, *supra* note 167.

¹⁶⁹ We admit that this is a rather speculative prediction, but it is quite plausible based on evidence from sources such as *China—WB Chief Economist Praises China's Macroeconomic Policies*, CHINA BUSINESS INFORMATION NETWORK, July 26, 1999, available in LEXIS, Country Reports, China Country Files; *China—Bright Signs in Economy Show Up*, CHINA DAILY, Aug. 16, 1999, available in LEXIS, Country Reports, China Country Files; and *China—Export Decline Shows Signs of Slowdown*, CHINA DAILY, Aug. 12, 1999, available in LEXIS, Country Reports, China Country Files.

¹⁷⁰ See *China—Investment From Asia Commences Recovery*, CHINA DAILY, May 23, 1999, available in LEXIS, World Library, Allwld File; *China Says Investment from East Asia Increasing*, AAP NEWSFEED, May 24, 1999, available in LEXIS, World Library, Allwld File.

¹⁷¹ See *Trends in R&D—People's Republic of China*, *supra* note 161.

¹⁷² See, e.g., Dunne, *supra* note 12, at 7 (noting that Clinton, with strong backing from the business lobby, proposed renewal of China's MFN status shortly after the Cox Report alleging Chinese espionage).

renewal of China's MFN status.¹⁷³ Senator Richard Gephardt (D-Mo.) comes close to being a poster boy for the protectionist element in Congress, but for the fact that he voted affirmatively on legislation to implement the Uruguay Round of GATT permitting the United States' entry into the WTO,¹⁷⁴ after having opposed it during the presidential primaries of 1992.¹⁷⁵ He has, however, long opposed placing China on par with other U.S. trading partners, using whatever rationale happened to be useful at the time—frequently the human rights issue—and is once again on the anti-China bandwagon.¹⁷⁶ We mention Senator Gephardt because far more of the anti-China sentiment in Con-

¹⁷³ See, e.g., Stan Crock et al., *The New China Syndrome—The Cox Report Casts a Pall Over the Political and Business Climate*, BUS. WK., June 7, 1999, at 30 [hereinafter *The Cox Report Casts a Pall*] (reporting on the increased ammunition provided to the anti-China element in Congress by the espionage alleged in the Cox Report).

¹⁷⁴ See generally Michael Kranish, *White House, Dole Wrangle Over GATT*, BOSTON GLOBE, Nov. 22, 1994, at National/Foreign 1 (indicating that Gephardt supported GATT).

¹⁷⁵ See Nancy Dunne, *US Anti-GATT Lobby Steps Up Campaign*, FIN. TIMES, Apr. 24, 1992, at 6 (explaining that Gephardt supported a resolution warning the President against GATT legislation).

¹⁷⁶ See generally David M. Lampton, *China—Think Again*, FOREIGN POL'Y, Spring 1998, at 13, 24 (debunking common negative assumptions about China, but agreeing with the negative perception of China's environmental pollution, and juxtaposing a May 1997 alarmist, xenophobic Gephardt speech against Lampton's own research-based realistic view of China). Actually, China has not been alone on Gephardt's list of whipping boy countries for in the 1988 presidential primaries, he lent voice to the bright idea of imposing an import duty that would quadruple to \$48,000 the price of the Korean Hyundai, that dreaded competitor of the American automobile industry. See Smith Hempstone, *Gephardt's Moment of Truth*, SAN DIEGO UNION-TRIB., Mar. 26, 1988, at B-11. In the 1992 presidential primaries, Gephardt decided to vent his indignation against Japan. See generally Charles Krauthammer, *Do We Really Need a New Enemy?*, TIME, Mar. 23, 1992, at 76. Gephardt received virtually no votes in either primary outside his home state. He also was a fervent opponent of the North American Free Trade Agreement ("NAFTA"), voting against it in 1992 and opposing its extension in 1997. See Marc Hebert & Gene Godley, *Fast Track, Truly a Slow Process*, BUS. MEX., June 1997, at Legal Briefs; Christopher Matthews, *Gephardt Shows He Again Has the Fire*, ARIZONA REPUBLIC, June 1, 1997, at H3 (observing not only Gephardt's various protectionist positions, but also his apparent desire to select the issues and their timing to maximize his chances of supplanting Vice President Al Gore as the Democrat presidential nominee in 2000); see also *Gephardt's New Protectionism*, DETROIT NEWS, May 28, 1997, at A10 ("And Mr. Gephardt's human rights arguments bear the suspicion that they are a guise for less noble, protectionist objectives.").

gress is Republican than Democratic¹⁷⁷ and because he provides such an excellent example of the politician (of whom there are many) who adopts xenophobic attitudes when it is politically expedient.¹⁷⁸

There can be no question that China's human rights record is terribly flawed,¹⁷⁹ and that the nation is still primarily autocratic. Several points are worth making in regard to both conditions. First, the Clinton administration's policy of decoupling economics from human rights and its concomitant pursuit of economic normalization with China has clearly helped the Chinese economic rebuilding effort that began in the early 1980s to flourish in the 1990s. Although one cannot say with any conviction that China's human rights record has improved dramatically during the '80s and '90s, it has not worsened as Sino-American economic ties have become closer, and we do not think there is a plausible reason to believe that it would have improved had the United States coupled economic ties with human rights improvements. Instead, we think the likely outcome would have been a trade war, less Chinese economic development, and still no improvement in human rights. If there was any evidence that conditioning economic relations on human rights improvements would actually have improved the lot of Chinese political dissidents, a strong moral argument could be made for coupling. The evidence is not there, however.

¹⁷⁷ See Tyler Marshall, *Partisanship Doesn't Stop at the Water's Edge*, L.A. TIMES, Oct. 6, 1998, at A5.

¹⁷⁸ Speaking of which, after learning of the Cox Report's contents, Republican presidential front-runner George W. Bush stated: "China is not America's strategic partner. China is a competitor." See *The Cox Report Casts a Pall*, *supra* note 173, at 31. Although Bush presumably was speaking of China as now being a *military* competitor, this kind of rhetoric, whether acted on or not, can easily cause serious damage to economic relationships as well. Moreover, China is not likely to be a belligerent military competitor. The country cannot afford an arms race, and hegemony simply does not seem to be on its agenda. See Lampton, *supra* note 176 (debunking the myth of Chinese hegemony). Moreover, it is common knowledge that when technology is the subject, friends do sometimes steal from friends, and the authors continue trying to figure out which of our allies is *not* also an economic competitor. Suffice it to say, we believe the seizure-like responses to the Cox Report by some members of Congress are more about American politics than true military or economic concerns.

¹⁷⁹ See, e.g., Michael Elliott, *Beyond History's Shadow*, NEWSWEEK, June 29, 1998, at 20, 25 (observing that, in 1998, more than 200,000 people remained in prison without being charged or tried for a crime).

Second, as we noted earlier, many celebrated economic thinkers such as Friedman, Dicey, Hayek, Mises, and Simons have maintained that political freedom, and the human rights that go with it, cannot exist without economic freedom; moreover, economic freedom over a lengthy period of time tends to produce political freedom and human rights.¹⁸⁰ The West, therefore, is unlikely to achieve full human rights for the Chinese, either as a stand-alone issue or coupled with economic pressure. Over time, however, increasing economic freedom brought about by market economics will encourage increased political freedom and, correspondingly, greater respect for human rights.¹⁸¹

Third, it is true that the P.R.C. remains officially an authoritarian state. However, both economic and political influences have flowed rapidly from Beijing to the large number of cities, special economic zones, and autonomous regions, where both economic and political freedom tend to be greater than permitted by official P.R.C. policy.¹⁸² This result of the P.R.C.'s conscious determination in the early 1980s to decentralize much decision making is salutary in many ways, but has produced the byproduct of localism—a loss of control by Beijing over local officials and businesses—that can have various effects on the central government's ability to achieve its objectives. As we discuss shortly, localism's negative effects manifest themselves when a locality is able to ignore the P.R.C.'s laudable goals, such as enforcing its patent laws. Localism's positive effects obviously occur when a locality grants more freedom than the central government has in mind. China is a country that does not lend itself readily to one simple label.

As noted earlier, despite China-bashing on the MFN issue that bears the earmarks of pre-election presidential and congressional politics, it was inevitable that China's MFN status would be renewed,¹⁸³ because (1) revocation of China's MFN status requires a two-thirds vote in both houses of Congress and there were far more than enough members of both parties in both houses who saw the folly of crippling U.S. trade with China,¹⁸⁴ and (2) exten-

¹⁸⁰ See, e.g., FRIEDMAN, *supra* note 12.

¹⁸¹ See *id.* at 8.

¹⁸² For a more thorough discussion of localism, see *infra* Section 6.4.

¹⁸³ See *supra* note 12.

¹⁸⁴ See Dunne, *supra* note 12.

sion of China's MFN status had strong backing from American business.¹⁸⁵ Finally, the P.R.C. and its people have made it clear that, despite their justifiable and lingering anger at NATO's bombing of the Chinese embassy in Belgrade, which they have aimed primarily at the United States, they have no intention of letting the event hinder further development of economic relations with the United States and other Western nations.¹⁸⁶

6.3. *China's Commitment of Resources to Domestic Research and Development*

China has followed the typical pattern of a developing nation by depending heavily on foreign investment and imported technology before being able to generate substantial internal growth and technological advancement on its own.¹⁸⁷ An economy must reach a certain stage of overall development before it can commit large resources to R&D. It cannot reach a much higher developmental level, however, without increasing domestic R&D investment. Attracting foreign investment and foreign technology can take a country's economy only so far. Technological advancement driven by internal R&D is a prerequisite to further economic development. Without it, even the most effective patent system cannot contribute much beyond giving greater assur-

¹⁸⁵ See *id.*

¹⁸⁶ See generally *China—Schneider Stands By Strategy*, CHINA DAILY, May 23, 1999, available in LEXIS, World Library, Allwld File (reporting that many foreign investors are following the lead of France's Schneider Electric and maintaining their investments in the Chinese market); Seth Faison, *Business in China: Longer-Term Worries*, N.Y. TIMES, May 20, 1999, at C10 (indicating Chinese separation of political and economic ramifications of the bombing); *NATO Bombing to Have No Impact on WTO Hopes: China*, ASIA PULSE, May 24, 1999, available in LEXIS, World Library, Allwld File (affirming China's commitment to opening up to the outside world and consequently joining the WTO); John Pomfret, *Politics Fail to Stir Busy Air of Chinese City*, WASH. POST, May 27, 1999, at A31 (describing local pragmatic economic views in Southern China).

¹⁸⁷ See IBRAHIM F.I. SHIHATA, *LEGAL TREATMENT OF FOREIGN INVESTMENT: "THE WORLD BANK GUIDELINES"* 1-8, 11,12 (1993). China has attracted a huge amount of foreign investment since it began its program of economic modernization. For the past five years, it has been the second-largest recipient of foreign investment in the world, behind only the United States. See *Chinese Official: China to Further Expand Opening-Up Drive*, XINHUA NEWS AGENCY, May 26, 1999, available in LEXIS, World Library, Allwld File.

ance to foreigners that their technology will be given reasonable protection.

It is difficult to evaluate data pertaining to China's internal, nonmilitary R&D resource commitment because it was virtually zero until less than twenty years ago.¹⁸⁸ Chinese investment in R&D as a percentage of its GNP averaged only 0.6% between 1981 and 1995.¹⁸⁹ Again, however, this very unimpressive figure is not especially meaningful because the time period over which the average was calculated began just as China was beginning an effort to work toward market economic principles, and there was no R&D to speak of during the initial several years of that period.¹⁹⁰ By 1997, the figure was 0.64%, with a P.R.C. commitment to increase it to 1.5% by the turn of the century.¹⁹¹ We do not know whether the Asian recession will prevent China from reaching that goal, but the Chinese leadership appears to be steadfast in its commitment to continued growth in R&D spending.¹⁹² Moreover, data about R&D in China as a whole is very difficult to assess because of the relative economic autonomy of many cities, special economic zones, and autonomous regions having had their genesis in the original post-Mao decision to decentralize economic decision making. Each such area engages not only in its own efforts to attract foreign investment and foreign business ventures, but also has meaningful discretion in directing its own R&D investment program.¹⁹³ Although the P.R.C. sets policies

¹⁸⁸ See THE WORLD BANK, 1998 WORLD DEV. INDICATORS, § 5.12, at 298.

¹⁸⁹ See *id.* This percentage put the P.R.C. slightly ahead of Greece and slightly below Chile. In 1996, however, China's high-technology exports totaled almost \$27 billion, or 21% of total exports, see *id.*, but most of this volume resulted from imported technology. See Norman Wingrove, *China Sees Tripling of R&D Spending as Key to 21st Century Economic Power*, RES. & TECH. MGMT., Nov.-Dec. 1995, at 2, 3.

¹⁹⁰ See *id.*

¹⁹¹ See *Basic Statistics on National Scientific and Technological Activities*, 1998 CHINA STAT. Y.B. (State Stat. Bureau) No. 17, at § 20-38; Wingrove, *supra* note 189, at 2.

¹⁹² See Wingrove, *supra* note 189, at 2.

¹⁹³ See, e.g., *China's Southwestern City Opens Investment Service Center*, XINHUA NEWS AGENCY, May 28, 1999, available in LEXIS, World Library, Allwld File; *China—Xinjiang Considered Popular Spot for Foreign Investment*, CHINA BUS. INFO. NETWORK, May 26, 1999, available in LEXIS, World Library, Allwld File; *China Hopes to Boost Foreign Investment in SEZs*, ASIA PULSE, May 26, 1999, available in LEXIS, World Library, Allwld File; *China—More Foreign Funds in Guangzhou*, ASIAINFO DAILY CHINA NEWS, May 26, 1999, available in LEXIS, World Library, Allwld File; *Foreign Invest-*

and overall goals and provides funding for many research efforts, most of the actual internal R&D is no longer managed in a top-down manner.¹⁹⁴

China's current R&D outlays are woefully inadequate to support internal development of enough technology of sufficient sophistication to work hand-in-hand with the new patent system in achieving the technological advancement necessary for sustained economic growth. Several points must be kept in mind, however, that provide ample reason for optimism.

(1) The P.R.C.'s commitment to an R&D effort is new by any relative measure, and its actions have demonstrated that the commitment is real. While China's R&D spending is currently far below that of developed nations as a percentage of GDP, it is at least increasing while that of Western nations is declining. In 1994, U.S. R&D expenditures were 2.61% of GDP, Italy's were 1.21%, and Canada's were 1.47%, each having declined as a percentage of GDP every year since 1991.¹⁹⁵ Data on R&D expenditures for several economic powers were available in our source only through 1993; Japan's R&D expenditures in 1993 were 2.72% of GDP (the same as that of the United States that year), Germany's were 2.48%, France's were 2.41%, and the United Kingdom's were 2.19%.¹⁹⁶ Since 1991, many other countries in the Organization for Economic Cooperation and Development ("OECD") have experienced declines in research and development expenditures measured as a percentage of GDP.¹⁹⁷

(2) Some observers see parallels between China's development in the early 1980s and that of Japan 30 years earlier.¹⁹⁸ At the

ment Rebounds in Jiangsu, China, ASIA PULSE, May 24, 1999, available in LEXIS, World Library, Allwld File; *Chinese City Touts Investment Potential*, JOURNAL OF COMMERCE, May 19, 1999; *China— Chengdu— Speed Up Technical Transformation with Foreign Investment*, ASIAINFO DAILY CHINA NEWS, May 17, 1999, available in LEXIS, World Library, Allwld File (all sources demonstrating that much of the authority, incentive, and responsibility for attracting and maintaining foreign investment lies with the provinces, cities, and special economic zones).

¹⁹⁴ See *id.*

¹⁹⁵ See *R&D Spending Down Across OECD Nations*, RES. & TECH. MGMT., Nov.-Dec. 1995, at 3, 3-4.

¹⁹⁶ See *id.*

¹⁹⁷ See *id.*

¹⁹⁸ See, e.g., Joseph A. Martellaro & Jing-Yau Chen, *Some Aspects of Growth and Technical Progress in the People's Republic of China*, 40 ECONOMIA INTERNAZIONALE 301, 310 (1987).

start of its modernization program China probably was at about the same point technologically as Japan was in the 1950s.¹⁹⁹ China needs substantial time to reach a relatively advanced technological level, and there is no way to confidently predict whether the time needed for China to reach that level will be similar to that of Japan. China has vastly greater expanses of usable land and natural resources, and its people have a recorded history of greater creativity than the Japanese.²⁰⁰ The Japanese, on the other hand, while not known for creativity, have proved to be superb at managing, organizing, and commercializing technology developed in the United States and elsewhere.²⁰¹

Another parallel with Japan may assist in forecasting China's future. China was already polluted before the beginning of its economic push, but exceptionally rapid economic growth has rendered its environment an utter mess.²⁰² Although the Chinese are already starting to show concern about their environment, one visiting Western diplomat commented that, if cleanup efforts do not take a more serious turn, "it will make Eastern Europe look like a nature park."²⁰³ The relation to our topic is that,

¹⁹⁹ ASIAN & PACIFIC CENTRE FOR TRANSFER OF TECHNOLOGY, TECHNOLOGY POLICIES AND PLANNING: PEOPLE'S REPUBLIC OF CHINA 7-8 (1986) (noting that, late in the 1970s and early in the 1980's, about 80% of China's technology was at approximately the same level of developed nations such as Japan in the 1950s and 1960s).

²⁰⁰ See Toshiko Takenaka, *Does a Cultural Barrier to the Intellectual Property Trade Exist? The Japanese Example*, 29 N.Y.U. J. INT'L L. & POL. 153, 154-55 (explaining that during periods when the Chinese and Koreans were producing their own technological advancements, the Japanese were focused not on creating but on acquiring technology from their two more creative neighbors). Moreover, historical records of the kind showing centuries of Chinese creative genius simply do not exist for the Japanese. For some examples of Chinese inventions, see *supra* note 16.

²⁰¹ See *id.* at 154.

²⁰² See Ben Boer, *The Rise of Environmental Law in the Asian Region*, 32 U. RICH. L. REV. 1503, 1504-05 (1999) (highlighting China's economic crisis); David Lague, *China May Be the World's Fastest Growing Economy, But Scientists and Governor Chris Patten Last Week Drew Attention to the Environmental Crisis That Has Come with the Industrial Boom*, S. CHINA MORNING POST, Feb. 21, 1993, at 1, available in LEXIS, World Library, Allwld File (discussing China's extensive pollution problems); see also Geoffrey Murray, *China Environmental Concerns Boon to Japanese Investment*, JAPAN ECON. NEWSWIRE, May 17, 1999, available in LEXIS, World Library, Allwld File (discussing that helping to clean up China's environment is likely to create meaningful investment opportunities for Japanese entities).

²⁰³ Lague, *supra* note 202, at 1.

technological advancement or not, effective patent system or not, a nation's economy and its people cannot prosper long without drinkable water or breathable air. Dr. Peter Hills, director of the Centre of Urban Planning and Environmental Management at Hong Kong University, said:

Some people believe China will follow the Japanese model and that is you get dirty, you get rich and then you clean it up. Japan got dirty and rich between 1950 and 1970 and cleaned up between 1970 and 1980. If you accept the Japanese model and that kind of reasoning, it becomes a race against time. The question is can China really get rich enough quickly enough before the costs of cleaning up become so horrendous that it is impractical.²⁰⁴

(3) The P.R.C. recently has been putting much of its national R&D funding into the nation's universities, which have been growing in number and quality.²⁰⁵ Before, most R&D funding went to state-run institutes or government-run academies, particularly the Chinese Academy of Sciences, which was a top-down Soviet-style research entity.²⁰⁶ This change, in turn, has created a healthy competition among China's universities both for funding and for research accomplishment.²⁰⁷ Another positive outgrowth of this R&D policy change is that universities, newly invigorated in scientific and engineering research, have begun to form high-tech business ventures that are at first affiliated with the schools and then later spun-off, but still retain ties with their originating universities.²⁰⁸ Although this pattern is now almost universal throughout China, Fudan University in Shanghai is recognized as the first to conceive of the idea and bring it to fruition.²⁰⁹

²⁰⁴ *Id.*

²⁰⁵ See David Swinbanks, *Competition Entering Chinese Research*, RES. & TECH. MGMT., Jan.-Feb. 1996, at 5, 5-6.

²⁰⁶ *See id.*

²⁰⁷ *See id.*

²⁰⁸ *See id.*

²⁰⁹ *See id.* The Chinese government claims to have done similar things, namely, creating and spinning off 400 businesses from the Chinese Academy of Sciences and two universities in the city, but academy officials privately admit that less than 10% of these businesses have any substance or a secure future. *See id.* at 6.

(4) The new environment for scientific inquiry has enabled the government and many universities to persuade bright young scientists to return to China from the United States and Europe.²¹⁰ Most of these scientists are under age forty; they are attracted not only by the remarkably different scientific environment than that which existed when they left, but also by offers of senior posts and research grants.²¹¹ Such a phenomenon is especially striking given the traditional practice of awarding senior scientific positions and other prestigious positions only to those advanced in years.²¹²

China's commitment to the increased R&D investment necessary for its new patent system to play a meaningful role in China's economic future, and the results thus far produced by that commitment, are probably best summarized as adolescent, growing, and holding much promise, but still somewhat distant from full maturity.

6.4. *Localism— The Unplanned Progeny of Decentralization*

As noted earlier, one of the cornerstones of the P.R.C.'s post-Mao efforts to modernize its economy along market-based lines was the decentralization of economic decision-making.²¹³ As long as Beijing's broad policies were followed, actual decisions about economic planning, investing, allocating productive resources, and achieving productivity and profit goals were relocated to the enterprise level.²¹⁴ In contrast with the former style of centralized planning and control of all economic decisions— economic micro-management from Beijing, if you will— decentralization seemed to be an eminently sensible idea. Indeed, it is not only sensible but palpably superior in most cases. As it has turned out, however, decentralization has produced negative repercussions for the enforcement of patent laws and other intellectual property protections. Local authorities usually carry out Beijing's directives without question, but the central government's intellectual property policies seem to be the exception for some reason, most

²¹⁰ See *id.*

²¹¹ See *id.*

²¹² See *id.*

²¹³ See *supra* note 80.

²¹⁴ See, e.g., Clarke, *supra* note 80, at 285-86.

likely because of the unprecedented amounts of money to be made by intellectual property rogues.²¹⁵

In its apparently sincere efforts to enforce its new patent law and other intellectual property rules, P.R.C.'s central government has discovered that it does not have the control it would like over local government officials, who sometimes act in complicity with powerful local business interests to whom they often are beholden for their positions.²¹⁶ Occasionally, even a locally stationed military official is also in complicity, allowing illicit businesses to pirate intellectual property with virtual impunity.²¹⁷ The P.R.C. has taken the problem of localism quite seriously by making its eradication one of the cornerstones of the 1995 MOU.²¹⁸ Many government raids on businesses profiting from purloined foreign intellectual property have been widely publicized in China's national and local press to signal Beijing's seriousness.²¹⁹

Despite China's recent efforts to create a better educated, trained, and presumably more independent cadre of judges, lawyers, and administrative officials, not enough progress has been made yet to combat localism. In perhaps the most important development to date, the June 1996 agreement with the United States, Beijing diminished its reliance on local authorities for enforcing its intellectual property laws against locally protected illicit businesses and pledged to turn over enforcement to the powerful Ministry of Security, the P.R.C.'s national police force.²²⁰ If such centralized enforcement efforts can succeed in eliminating the deleterious effects of intellectual property localism without interfering with the many positive attributes of economic decentralization, the P.R.C. will have come a long way toward actualizing the role of patents, copyrights, and trademarks in economic modernization. One way of achieving the best of decentraliza-

²¹⁵ See Berkman, *supra* note 155, at 16.

²¹⁶ See *id.* at 17.

²¹⁷ See *id.* at 15-16.

²¹⁸ See *id.* at 4, 9-10.

²¹⁹ For reasons previously discussed in footnote 15, most publicity surrounding widespread intellectual property piracy and Chinese enforcement efforts against it has focused on infringement of copyrighted music, movies, and software. Localism also permits factories producing patent-infringing products to resist P.R.C. enforcement efforts.

²²⁰ See, e.g., Faison, *supra* note 158 (outlining the details of the U.S.-Chinese agreement).

tion and avoiding the worst of localization is to use not only the iron fist of the Ministry of Security, but also to provide more funding to local officials that could be used in assisting their enforcement efforts. Not all local officials have cozy relationships with intellectual property pirates; both those who do and those who do not would be armed with greater independence to follow the P.R.C.'s intellectual property policies if given more funding assistance to go along with the enforcement assistance of the Ministry of Security.

Localism also has exacerbated the difficulties of enforcement coordination among the P.R.C. and its thirty provinces, autonomous regions, and municipalities.²²¹ Although these problems remain, meaningful progress apparently is being made. In July 1994, the P.R.C. established the Intellectual Property Executive Conference (IPEC) as a unit of the State Council.²²² IPEC first focused on the details of establishing coordinating administrative offices in the various regions and making public the points of contact for reporting infringement.²²³ IPEC then concentrated on enforcement activities, achieving substantial if not total cooperation from local officials; coordinated enforcement efforts will continue and increase.²²⁴ The agency also has initiated an extensive education and public awareness program.²²⁵ These efforts are further demonstrated by the provision of intellectual property education to approximately fifty percent of Chinese civil servants and eighty percent of the management staff at research institutes and industries.²²⁶

6.5. *Developing a Legal System and Intellectual Property Regime Governed by the Rule of Law*

Yet to be completed is the further strengthening of China's judicial and administrative structures to deal with the intricacies of not only a modern patent system, but also the panoply of other laws necessary to support a market economy. Like that of

²²¹ See Berkman, *supra* note 155, at 20-21.

²²² See Duan Ruichun, *China's Intellectual Property Rights Protection Towards the 21st Century*, 9 DUKE J. COMP. & INT'L L. 215, 217-18 (1998).

²²³ See *id.*

²²⁴ See *id.*

²²⁵ See *id.*

²²⁶ See *id.*

the former Soviet Union, China's legal system under Communist rule has been, until recently, purely instrumentalist, serving merely as a means to achieve state control.²²⁷ Government by the rule of law serves as a means to provide the public with procedurally systematic and substantively fair protection for private property and personal rights, to assist people and companies in realizing their reasonable commercial expectations, and to maintain order without infringing on fundamental rights of expression, freedom, or privacy. No system approaches perfection in achieving these worthy objectives.

Governance by the rule of law also is essential to an effective system for protecting patented inventions and other intellectual property. That part of the legal and administrative system devoted to granting and enforcing patents cannot operate in a vacuum; it must be part of an effective whole. To say the least, it is difficult to develop a workable legal system anywhere in which there is no tradition of governance by law. It is harder still in the largest nation on earth, with a history of Byzantine governmental structures, from the Zhou dynasty in 221 B.C. through modern Communist rule, that have existed primarily to serve the state's interests.

The task becomes more daunting still in a nation with both ancient Confucian cultural traditions and more recent socialist ones antithetical to the rule of law. Not only are the leaders unaccustomed to the law, but also the population is unknowledgeable about law and the role it is supposed to play in governing a society. In such a nation, judges are too few and ill-trained, leading not only to erroneous decisions but also to decisions lacking impartiality. The same is true of decisions made by poorly trained administrative officials. Lawyers are few and poorly trained because they, and the law schools that educate them, have been inadequate since even before Chairman Mao and his operatives destroyed them in the Cultural Revolution.²²⁸ Rectifying these problems represents perhaps the most difficult task of all faced by post-Mao reformers.

Chinese economic reformers of the 1980s did not immediately attack all of the problems caused by the practically non-existent legal system, because they lacked understanding of law and its

²²⁷ See Lewis, *supra* note 160, at 500-01.

²²⁸ See *supra* notes 75-76 and accompanying text.

processes and because the problem was simply too large and complex to tackle all at once. They saw the need for laws to serve as a foundation for economic modernization, and thus adopted a great deal of economic legislation.²²⁹ They too often seemed to equate enactment with implementation, however, and it was not until later that they saw (or were forced by the West to see) that laws mean nothing without an adequate number of courts staffed by competent judges knowledgeable in and committed to the rule of law, trained support personnel, similarly skilled administrative agency personnel, and well-educated lawyers to make both courts and administrative agencies accessible.

To their credit, once the Chinese leaders saw what was needed, they set about to learn and make improvements, to the extent permitted by the resources at hand. Even when their actions create cognitive dissonance because of their life-long immersion in Communist ideology, in recent years they usually have given in to pragmatism. More law schools are being created,²³⁰ and they are paying more attention to the analytical education of their students.²³¹ The number of lawyers increased from 3,000 in 1980 to over 90,000 in early 1995, with an apparently attainable goal of 150,000 lawyers and 450,000 other trained legal personnel (presumably paralegals and law clerks) by this year.²³² Judges without adequate legal training are being provided with it.²³³ One

²²⁹ See *supra* notes 81-82 and accompanying text.

²³⁰ See, e.g., *Prestigious Qinghua University Re-opens Law School After 47 Years*, BBC SUMMARY OF WORLD BROADCASTS, Apr. 26, 1999, available in LEXIS, Asiapc Library, Curnws File (reporting the reopening of a law school in one of China's most prestigious universities).

²³¹ See, e.g., *Law Courses to Focus on Analysis, Reasoning*, XINHUA NEWS AGENCY, May 26, 1999, available in LEXIS, Asiapc Library, Curnws File (noting that the many new law schools are not only seeking to provide a broader legal education rather than the traditional highly specialized courses of study, but also are focusing much more on legal analysis and reasoning).

²³² See Berkman, *supra* note 155, at 29; see also William P. Alford, *Tasselled Loafers for Barefoot Lawyers: Transformation and Tension in the World of Chinese Legal Workers*, 141 CHINA Q. 22, 22, 30 (1995) (discussing the rapid growth of the legal profession in the P.R.C. since 1980). Given that Alford's data is over five years old, and that China has been making a sustained, major effort to expand the number of law schools and law graduates, his number of law graduates clearly is far below today's.

²³³ See Jerome A. Cohen, *Reforming China's Civil Procedure: Judging the Courts*, 45 AM. J. COMP. L. 793, 795-97 (1997) (discussing various educational and training programs for Chinese judges); see also Guoqiang Lu, *Advances in the Protection of Intellectual Property Rights in China*, HARV. CHINA REV., Summer 1998 at 71, 72 (noting that over 3,000 judicial personnel have received

of the most notable developments in seeking a judiciary driven by the rule of law was the 1995 passage by the People's Congress of the Law on Judges, which requires those entering the judiciary to be formally educated, pass examinations, and continue training after appointment.²³⁴ Yet another landmark legal event occurred in 1995, when the People's Congress gave much greater authority to Chinese customs officials to stop the importation of products that infringe on the rights of foreign owners of patents, copyrights, and trademarks. This effort appears to be working reasonably well according to recent reports.²³⁵

Yet another crucial element in developing a tradition of governance by the rule of law in general, and a receptive attitude toward treating some intellectual products as protectable property rights in particular, is greater public knowledge and acceptance of these concepts. The Chinese populace possessed little cognizance of the rule of law since most of their cultural norms and values were shaped first by Confucianism, then by the practice of either not codifying laws or making the codified laws available only to political leaders and magistrates, and finally by Communism.²³⁶ The P.R.C.'s leadership has recognized that there can be no understanding or acceptance of the law's role in fairly and predictably defining rights and obligations in society unless a substantial percentage of that society's members are adequately informed. Thus, the government and the news media²³⁷ have placed great emphasis on imparting such knowledge to the Chinese people. Hardly a day passes without multiple media outlets carrying various stories about the law, its role in society, its benefits, and cau-

substantial new education and training, leading many observers to note the great improvement in Chinese trials, even those involving technical or otherwise complex issues).

²³⁴ See *NPC Committee Adopts Law on Judges*, F.B.I.S. DAILY REP.—CHINA, F.B.I.S. No. CHI-95-054, Mar. 21, 1995, at 32; see also Berkman, *supra* note 155, at 27.

²³⁵ See David Weild III & Hailing Zhang, *Chinese Enforcement Efforts May Protect IP*, NAT'L L.J., May 18, 1998, at C11.

²³⁶ See Berkman, *supra* note 155, at 31-34. See generally Walter Gellhorn, *China's Quest for Legal Modernity*, 1 J. CHINESE L. 1 (1987) (discussing the historical development of Chinese efforts to modernize its legal system); Hugh T. Scogin, Jr., *Between Heaven and Man: Contract and the State in Han Dynasty China*, 63 S. CAL. L. REV. 1325 (1990) (discussing the emergence of modern Chinese views toward contract law).

²³⁷ The two are no longer precisely co-terminous.

tionary reports about the consequences for lawbreakers.²³⁸ One illuminating anecdote that was reported first by the Associated Press,²³⁹ and then widely publicized throughout the nation by the Chinese state press,²⁴⁰ concerned the struggles of a local merchant against counterfeiters of the trademarked condoms and sex toys he sold. He was ultimately bankrupted because of the free ride taken by counterfeiters on his trademarked goods.²⁴¹ Although involving flagrant trademark infringement rather than patent infringement, the widespread coverage of the event and the public's negative reaction to the counterfeiting illustrate several important phenomena. First, the extent of the event's coverage provides a concrete demonstration of the government's and the media's efforts to educate the public about law and intellectual property. Second, the P.R.C. correctly perceived this as an illustration to which the Chinese people could easily relate, involving a small, local business destroyed by a violation of intellectual property rights. Third, the negative public reaction to the event revealed a perception that intellectual property rights are important, that their violation can cause real harm to the Chinese themselves, not just to foreign businesses, and that the law has a legitimate role in protecting intellectual property.

7. CONCLUDING OBSERVATIONS

The Chinese, with the oldest continuing civilization in the world and a tradition of inventive and creative genius, have ancient cultural and legal traditions completely polar to the protection of intellectual products. Failure to understand Chinese culture led to the failure of foreign government attempts to force patent and other intellectual property laws on China. Confucianism, and then Communism, simply did not countenance the idea

²³⁸ See Berkman, *supra* note 155, at 15 n.64, 33. Most of the publicity about enforcement efforts centers on copyright and trademark infringement because piracy has become rampant. This is so because piracy of copyrights and software is easier and it is far easier for the press to report, and for the public to understand, stories about closing down huge factories producing pirated CDs and videos than particular instances of patent infringement.

²³⁹ Elaine Kurtenbach, *Condoms Among Latest Targets of Chinese Crackdown on Counterfeits*, ASSOCIATED PRESS, Feb. 2, 1996, available in 1996 WL 4409759.

²⁴⁰ See Berkman, *supra* note 155, at 33.

²⁴¹ See *id.*

of providing property-like protection to products of the individual intellect.

The P.R.C.'s post-Mao leaders, however, realized that their economy must modernize by adopting fundamental market-based precepts or else face ultimate economic dysfunction of catastrophic proportions. They recognized that a body of law had to be created to serve as a foundation for creating a market economy both as an end itself and as an attraction for more foreign investment. Without any tradition of governance by the rule of law, however, they at first equated enactment with implementation. Partly because of foreign pressure, especially from the United States, and partly because the P.R.C.'s leadership came quickly to recognize reality, China began major initiatives to improve their overall system of higher education along with much greater emphasis on education in science, technology, and law. The Chinese have encountered many problems en route, but much recent evidence suggests that they are making quite meaningful progress.

Serious efforts on the part of the Chinese government have made the new patent system more accessible.²⁴² The emphasis on training more scientists and engineers continues, as does the creation of more law schools, the training of more lawyers, and the training of more patent specialists. By sending increasing numbers of students abroad for technical education, legal training, and specialized training in patent law and practice, China has shown a commitment to create a patent system that is more than just a superficial concession to international pressure.²⁴³

²⁴² See Jian, *supra* note 99, at 8-9.

²⁴³ There remains a significant problem for the Chinese, however, when they send students to the United States for education in science and technology, namely, persuading them to come back home. They are in demand in the United States after graduation because of our own shortages of such technically trained individuals, and only about 10% of them have been returning to China. Indeed, many of the 13,000 Chinese students annually who study in the United States manage to parlay a student visa into a passport. See, e.g., Maggie Farley, *Shanghai Youths Test Welcome Mat in U.S.*, L.A. TIMES, May 3, 1999, at A1. Farley reported on a group of 32 Chinese high-school students in the United States who failed to return to China as scheduled and were found by the U.S. State Department and the Immigration and Naturalization Service (INS) to have been enrolled in classes elsewhere in the United States. While noting that approximately 90% of Chinese students at various levels have not been returning to China, the article observed that P.R.C. officials, U.S. diplomats in China, and the INS now have a much greater awareness of the problem and a greater commitment to cooperate in rectifying the situation. China will

In addition, specialized intellectual property courts staffed with judges having both technical and legal training have been established in the major cities and special economic zones.²⁴⁴ Foreign entities seeking to obtain or enforce patents in China must use the patent agents and attorneys at one of five government-approved patent agencies.²⁴⁵ The assistance of local counsel is almost always needed when legal matters must be dealt with in another country, so in that respect the Chinese procedures for filing by foreign applicants are not unique. The difference, of course, is that there is a choice of only five representation entities to choose from in China. However, requiring foreigners to use one of the designated agencies probably is a wise policy decision for the time being, because there still are not nearly enough well-trained patent agents and attorneys in China, and close government oversight of those handling the patent affairs of foreign clients is likely to be necessary for some time to come. In the decades ahead, as more trained patent specialists become available, the current restriction to a very small number of patent agencies will have to be changed.

China has attempted to make its patent system more accessible to its people, as well. The Patent Reexamination Board, for example, sends its members to various areas of China to conduct investigations and hearings concerning patent validity issues so that citizens outside the major urban centers may have more convenient and less costly access to this major administrative decision-making body.²⁴⁶ Much greater economic development, scientific and technological training, and Chinese investment in R&D is manifestly necessary, however, for improving access to the P.R.C. patent system and for enabling Chinese citizens to achieve technological advances worthy of patenting. If not already self-evident, this proposition is underscored by 1996 statistics showing

probably reinstitute tight controls over students seeking to study in the United States, and the INS is likely to tighten its visa restrictions, as well.

²⁴⁴ See Leslie Cataldo, *A Dynasty Weaned from Biotechnology: The Emerging Face of China*, 26 SYRACUSE J. INT'L L. & COMM. 151, 154 (discussing the geographic expansion of intellectual property courts into municipalities, provinces, and economic zones).

²⁴⁵ See ALFORD, *supra* note 10.

²⁴⁶ See *id.* at 372, 376 (noting that by 1992 there were fifty-four official Administrative Authorities vested with the power to settle patent disputes in the People's Court in cities with independent development planning, coastal cities open to foreign investment, and the SEZs).

that, of 43,780 patent rights granted by the Chinese Patent Office (CPO), only 2,976 (7%) were for inventions, whereas 27,171 (62%) were for utility models (representing minor improvements that were merely registered, not examined by the CPO), and 13,633 (31%) were for nonfunctional designs.²⁴⁷

Finally, when Chinese subjects are involved in the patent system, there is a great deal of informal assistance in the interactions between patent agents or attorneys, examiners in the CPO, and judges hearing patent disputes.²⁴⁸ The Chinese recognize that their system is still very young, with much more development required. Examiners help improve patent applications in a number of unorthodox ways, such as permitting a number of face-to-face meetings with applicants and their agents/attorneys and referring applicants to particular attorneys having more knowledge of the technology in question. Patent applicants in the United States, Europe, and other nations with well-developed patent systems neither can, nor should, expect this kind of assistance. If the Chinese patent system develops as planned, of course, the number of patent applications and disputes will rise to the point where such informal assistance will become impossible. When the Chinese arrive at that point, however, the need for such assistance should decline accordingly.

Although significantly more work is needed before China has a stable and completely effective patent system, there is clearly reason for optimism. One must keep in mind that the mere idea of patents is quite new in China in comparison with most other nations; the first real patent law is only fourteen years-old, and many of its important provisions are only six years-old. The combination of ancient cultural antipathy toward intellectual property generally and patents particularly, the short twenty-year period that has passed since the P.R.C. began even the first steps toward economic modernization, and the even more youthful nature of the patent system, should lead a rational observer to recognize that patience is needed. There was undoubted truth in the statement of Mickey Kantor, then U.S. Trade Representative, that the United States "would not wait forever."²⁴⁹ He made this statement, however, less than one year after the 1995 Sino-U.S.

²⁴⁷ Yin Xintian, *A Brief Introduction to the Patent Practice in China*, 9 DUKE J. COMP. & INT'L L. 253, 255 (1998).

²⁴⁸ See Cataldo, *supra* note 244, at 153-55.

²⁴⁹ Berkman, *supra* note 155, at 3 n.8.

MOU. Perhaps it was necessary, as it led to yet another agreement in 1996 centered on making Chinese markets more open.²⁵⁰ A knowledgeable non-political observer of circumstances in China, however, may wonder whether the attitude expressed by Kantor manifests a seriously myopic vision of the time frame necessary to bring such major change to a country with China's characteristics.²⁵¹ While nudging China forward in its enforcement of patent and other intellectual property rights, as well as providing U.S. assistance to China's effort promised in the 1995 MOU, developed nations generally, and the United States most particularly, must be patient. Despite the distance China still must travel to reach its objectives, the West should view the glass as half-full rather than half-empty because of the evidence of recent progress at a rather rapid rate and an apparently real commitment on the part of China to make the system work. These signs tend to indicate that the current patent system in China ultimately will be a success.

The history of China demonstrates the slow pace of change in Chinese institutions and culture. This is a self-evident proposition for any substantial change in complex social, economic, legal, or political structures. Attempts to make rapid, fundamental change, such as those aimed at introducing patent law in the eighteenth and nineteenth century, or at the end of the Republican period, are destined to fail. Perhaps the most important aspect of the current movement toward true recognition and enforcement of patent rights is its emphasis on long-term goals, such as the construction of the educational, legal, and administrative infrastructures demanded for patent law to possess meaning and substance. Moreover, Western nations should be sensitive to Chinese cultural and social conventions, and seek creative solutions to patent controversies rather than force solutions on the Chinese that do not fit China's cultural context. An effective system for protecting patents and other intellectual property rights can exist in a socio-political context other than that of liberal democratic societies, albeit in a somewhat different form. Assum-

²⁵⁰ See *id.*

²⁵¹ See Assafa Endeshaw, *Commentary: A Critical Assessment of the US-China Conflict on Intellectual Property*, 6 ALB. L.J. SCI. & TECH. 295, 304-06 (1996) (asserting that the United States is seeking to impose intellectual property standards on developing nations that even developed nations have trouble attaining).

ing that China continues on its current course, and with the proper cooperation from the West, China can successfully complete its transition to a patent-assisted system of technological advancement and corresponding economic growth. Although China undoubtedly will incur problems along the way, especially as economic progress brings the desire for freedom and civil rights to the forefront of popular Chinese thought, many signs point to the country's ultimate achievement of its almost unparalleled economic potential.

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