

Blunting the Later-Mover Advantage: Intellectual Property and Knowledge Transfer

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The United States followed a path of initially giving little protection to intellectual property such as to benefit from the IP of those we term earlier-movers on the world stage of economic development. This symposium piece argues that Japan and China have been following a similar trajectory in their intellectual property laws while progressing on their own economic climb. Widespread international outsourcing of manufacturing has made intellectual property a key asset for private companies, strengthening tendencies of earlier-movers to formulate and enforce strict intellectual property laws. This suggests that countries like China respond not only to pressure from earlier-movers like the United States to increase intellectual property protection, but are in fact also driven by concerns against their own later-movers. Perhaps curiously, if the hierarchy of movers shifts, the relative interest in intellectual property enforcement will as well--and China will seek to protect its goods against infringement by the likes of the United States and Japan some day.

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Introduction

“On World Intellectual Property Day, we not only celebrate invention and innovation, but also we recognize how integral intellectual property rights are to our Nation’s economic competitiveness. Intellectual property rights support the arts, sciences, and technology. They also create the framework for a competitive market that leads to higher wages and more jobs for everyone. The United States is committed to protecting the intellectual property rights of our companies and ensuring a level playing field in the world economy for our Nation’s creators, inventors, and entrepreneurs.”

-- Donald J. Trump¹

Intellectual property is commonly argued to be a source of economic competitiveness, and its protection is critically important to those countries that perceive themselves to have an economic and technological edge. Indeed, intellectual property protection allows earlier-movers--those who through previous scientific or technological innovation have an edge over competitors--to maintain their advantage vis-à-vis later-movers--those seeking to catch up to and overtake earlier-movers. However, historically most scientific or technological innovations of import have, even in the face of penalty of death, been transferred to and, critically, improved upon by later-movers. Earlier-movers have a tendency to become overtaken by later-movers that learn from, and improve upon, the knowledge of earlier-movers. From the perspective of countries' economic competitiveness, the danger of knowledge transfer stems not from the prospect of unfair competition but also, in the long run, from the possibility that the recipient might overtake the source by innovating on the knowledge transferred. Countries that have the earlier-mover advantage in some domain have a strong incentive to protect their intellectual property against later-movers at any one point in time. However, to the extent that a country is concerned with maintaining a perceived economic or technical lead, intellectual property protection is only one element of a larger strategy that must emphasize intellectual property production. Intellectual property protection protects past innovation, but future innovation requires continuous intellectual property production that depends on more than just a solid intellectual property legal framework.

Countries' views toward and willingness to enact as well as enforce intellectual property laws often track their level of not just absolute but also relative economic development, as illustrated by the examples of the United States, Japan, and, recently, China. All three countries realized rapid economic growth by first building the human and physical infrastructure needed to sustain growth, and then, selectively, by hook or by crook, learning from other countries. As these countries began to overtake competitors economically and technically, so did their intellectual property protection laws become increasingly strict and severe. With economic growth, countries that previously acted as industrial spies and infringers of others' intellectual property seem to become stalwart defenders and maintainers of (their) intellectual property rights.

The Trump administration's full-court press against unfair competition from China, one prong of which is vociferous complaints of intellectual property infringement, makes the question

¹ White House, Proclamation, *President Donald J. Trump Proclaims April 26, 2018, as World Intellectual Property Day* (Apr. 26, 2018), <https://www.whitehouse.gov/presidential-actions/president-donald-j-trump-proclaims-april-26-2018-world-intellectual-property-day/>.

of what role intellectual property plays in economic competitiveness not only academically interesting but also highly salient. The basic argument by the administration seems to be that American economic competitiveness vis-à-vis China can be maintained by strengthening intellectual property protection. This argument rests on the assumption that China is a copycat that on balance infringes more on others' intellectual property than it creates. This may be shifting, and overlooks the decades-long investment-driven rise of China. Currently, and going forward, China might in fact be producing more intellectual property of certain types than the United States, and protecting it through an increasingly robust legal system. This has far-reaching consequences both for the United States and China. To explore these consequences, this symposium piece explores the relationship between intellectual property and economic development over time in general, as well as specifically in the cases of the United States, Japan, and China.

Intellectual property covers a large swath of immaterial property, and it is used here in the same sense as used in the March 22, 2018 report of the United States Trade Representative on China. That is to say, it covers the legally protected know-how that undergirds a modern economy, i.e. 'patents, copyrights, trademarks, trade secrets'.² While this usage is somewhat imprecise, it corresponds well with how it is used in relation to economic development, especially by the Trump administration.

Part I presents the idea of earlier- and later-mover advantage as applied to intellectual property and economic development. The earlier-mover advantage is the technological and economic competitive advantage that a company or country has vis-a-vis its competitors by virtue of relative temporal precedence. The compound nature of economic growth and the importance of earlier inventions for later mean that being earlier in seeing rapid, or even comparatively high, economic growth and technological development pays dividends over long periods of time. Being later provides its own set of advantages, not least of which is the possibility of leapfrogging the earlier-mover by skipping intermediate steps. We use the terms "earlier-mover" (rather than first or early-mover) and "later-mover" (rather than second or late-mover) because this paper describes countries' positions relative to each other, which can vary over time. The West in general, and the United States in particular has for decades had the earlier-mover advantage. East Asia in general, and China in particular, has shown how the later-mover advantage can be exploited with the right policy packages.

Part II presents three cases, that of the United States, Japan, and China, their economic development and its relationship with infringement, production, and protection of intellectual property. The first two have in the past decades been earlier-movers, with a clear economic and technological advantage over later-movers. However, all three have a history of being later-movers, the United States vis-a-vis Great Britain and Europe, Japan vis-a-vis the United States and the West, and China vis-a-vis the United States, West, and Japan. In the case of the United States and Japan, flagrant initial intellectual property infringement, along with a more (in the case of Japan) or less (in the case of the United States) purposeful investment in intellectual property production led to economic growth, and, over time, increasingly stringent intellectual property protection. Aggressive and successful exploitation of the later-mover advantage over time led both the United States and Japan to equally aggressively protect their at times arguably ill-begotten earlier-mover advantage as they out-grew and out-innovated those whose intellectual property they had initially

² U.S. Trade Rep., *Findings of the Investigation Into China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation under Section 301 of the Trade Act of 1974*, at 6 (March 22, 2018), <https://ustr.gov/sites/default/files/Section%20301%20FINAL.PDF>

infringed upon. China has so far followed closely in the footsteps of both the United States, and especially Japan, allegedly infringing on the intellectual property of earlier-movers, aggressively investing in domestic intellectual property production, and over time building a comprehensive framework for protecting intellectual property. A future where China expects the same protection of its intellectual property that former earlier-movers demanded from it might not be far off.

Part III builds on the previous parts, and presents the argument that while intellectual property protection is important, production is equally if not more important. Intellectual property protection alone will not allow any country to maintain an edge vis-a-vis other countries. Historically, with the possible exception of Greek Fire, even at the pain of death knowledge transfer has been inevitable. What allowed some countries to gain and maintain economic competitiveness was their capacity to develop new science and technologies. To the extent that an overemphasis on protection of old intellectual property distracts from policy initiatives to promote production, it could prove to be highly disadvantageous. Furthermore, to the extent that intellectual property protections blunt the later-mover advantage, an ironclad global intellectual property regime is likely to make it harder for overtaken earlier-movers once they become later-movers.

I. Earlier- and Later-Mover Advantage

While the idea of earlier- and later-mover advantage is well-established in the business world, the idea also holds in political economy. An extreme example is Jared Diamond's explanation for Eurasia's relative development. It is partly deterministic, that environment played a critical role, but also about the small initial advantages that became devastating power disparities over time. Similarly, the best predictor of a country's development level is its past development level.³ The West is a highly developed region today in no small part because it was the most developed region already a century and a half ago.

Being a later-mover provides its own set of advantages, not least of which is the possibility of leapfrogging the earlier-mover by skipping intermediate steps.⁴ For example, it took almost four hundred years from the publication of William Gilberte's *De Magnete* in 1600, which introduced the word electricity, to the creation of the integrated circuit by Texas Instruments. The earlier-mover advantage of the West allowed for its development of integrated circuits. The later-mover advantage is the short-circuiting of centuries of piecemeal scientific progress. Non-Western integrated circuit designers and manufacturer do not have to start by working themselves up from first principles of electricity--rather, they skip all intermediate steps.

History is replete with examples of earlier-movers being overtaken scientifically and economically by later-movers. Historically almost all technical and scientific developments of note and import have invariably been spread from earlier-movers to later. For most of history, knowledge transfer has been an immutable force.⁵ The question then is not how to prevent it, but

³ Mattias Ottervik, *Gender and Progress: How Gender Equality Affects Long-Term Human Development*, Ph.D. thesis, The Chinese University of Hong Kong, Department of Government and Public Administration, 2017.

⁴ ALEXANDER GERSCHENKRON, *ECONOMIC BACKWARDNESS IN HISTORICAL PERSPECTIVE: A BOOK OF ESSAYS* (1962).

⁵ PETER BELLWOOD, *THE FIRST FARMERS: ORIGINS OF AGRICULTURAL SOCIETIES* (2004); George Basalla, *The Spread of Western Science*, 156 SCIENCE 611 (1967); Steven J. Harris, *Networks of Travel, Correspondence, and Exchange*, 3 CAMBRIDGE HISTORY SCI. 341 (2006).

what is made of it. That is to say, how can each innovation be made the basis for the next, and who will the next innovator be? Movable type printing was critical for the progress and dissemination of science during the Western Renaissance and Enlightenment,⁶ but foundational to that was the comparatively cheap and sturdy paper invented in China.⁷ It is doubtful that movable type printing would have had the impact it did if Gutenberg had been forced to print on papyrus or parchment. Some of this diffusion of knowledge happened naturally, such as Indian numerals being adopted throughout the Middle East before making it to Europe, but most happened through more sordid means. Paper-making likely made its way to Europe by way of the Abbasid Caliphate's capture of Chinese paper-makers at the Battle of Talas.

While the Industrial Revolution was a period of rapid technical, economic, and scientific development across the West, the national foundation for it was laid not seldom through industrial espionage and intellectual property infringement.⁸ For example, British entrepreneurs illegally copied Italian designs for mechanized silk-spinning, and then improved upon them and used them to spin cotton, which had a significantly larger market.⁹ Later-mover United States in turn encouraged the illicit, and according to British law illegal, transfer of knowledge to the United States. Entrepreneurs in the United States improved upon the illicitly acquired knowledge, and its government over time became as forceful a proponent of protection of proprietary knowledge as had been Italy's and Great Britain's. Christopher Roser, describing the round-robin industrial espionage behind the creation of modern manufacturing across the West, summarizes it in the following way:

It is easy to see analogies. Italian and British industrialists back then were probably as upset about the theft of intellectual property as modern industrialists are about technology theft. Similarly, modern China, on the receiving end of many modern-day transfers, is probably as snug as a bug about this gain as the United States or Germany was back then. In all cases, countermeasures were, at best, only able to slow down the knowledge transfers.¹⁰

Proprietary knowledge was illicitly transferred between competitor nations throughout the Industrial Revolution, like it had been in the ages past.

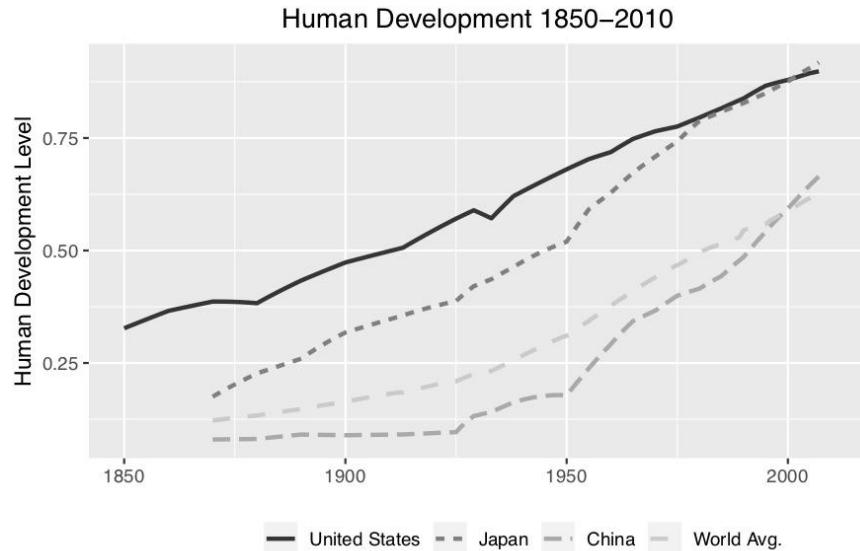
⁶ ELIZABETH EISENSTEIN, THE PRINTING REVOLUTION IN EARLY MODERN EUROPE (1983).

⁷ THOMAS FRANCIS CARTER, THE INVENTION OF PRINTING IN CHINA AND ITS SPREAD WESTWARD (1925); Susan Thompson (1978), *Paper Manufacturing and Early Books*, 314 ANNALS N.Y. ACADEMY SCIS. 167 (1978).

⁸ CHRISTOPH ROSER, “FASTER, BETTER, CHEAPER” IN THE HISTORY OF MANUFACTURING: FROM THE STONE AGE TO LEAN MANUFACTURING AND BEYOND (2016).

⁹ *Id.* at 104-10.

¹⁰ *Id.* at 110.



In modern times both Japan and China were quintessential later-movers. When American gun-boats forcibly ‘opened’ Japan, it set off a civil war whose victors concluded that it was, in terms of wealth and power, about forty years behind the West. The new Japanese government initiated a global fact-finding mission, the Iwakura Mission, which visited the most developed countries in the world to search for clues to the West’s economic and military power. The lessons learned were immediately turned into social, economic, and political policy, transforming the country. Judicious application of what it had learned from earlier-movers transformed Japan into an industrial power in a generation. Similarly, at the founding of the People’s Republic, China was one of the poorest, least developed countries in the world, and as its government set about improving the quality of life for its citizens it had its work cut out for it. What it did have, however, was foreign examples to learn from, and learn it did. Like Japan before it, Chinese intellectuals and government scoured the world for the sort of practical knowledge that would allow China to realize rapid development. One way to quantify just how far behind Japan and China were with regard to other countries is to compare their level of human development, a composite measure of education, health, and material welfare created by the United Nations.¹¹ As shown in figure X,¹² in terms of human development, both Japan and China were able to realize rapid improvements, in the case of Japan allowing it to catch up to earlier-mover United States, and in the case of China going from one of the least developed to being one of the more developed countries in the world. In the case of China there is a clear break in the curve in 1950 as the new republic set about to develop.

II. Intellectual Property and Development

What intellectual property protection accomplishes, at least in theory, is that by making some knowledge proprietary, it offers an effective mechanism of blunting the later-mover advantage. In the case of the United States it allowed companies to transfer manufacturing know-

¹¹ U.N. Dev. Programme, HUMAN DEVELOPMENT REPORT (1990), http://hdr.undp.org/sites/default/files/reports/219/hdr_1990_en_complete_nostats.pdf.

¹² Leandro Prados de la Escosura, *World Human Development: 1870–2007*, 61 REV. INCOME & WEALTH 220 (2015); Ottervik, *supra* note ____.

how to developing countries, like China, and still retain a sense of ownership. Production could be outsourced because there was, in theory at least, little fear that manufacturers would turn around and wholesale infringe on the intellectual property rights of their customers. The lack of fear was justified for two reasons. First, most Western consumer brands source manufacturing or design and manufacturing expertise from other companies, an arrangement that would not have been possible without intellectual property protection. Second, and perhaps more importantly, as long as the outsourcing companies had an innovation pipeline, not seldom fed by public investments, such as the space program and ARPANET,¹³ and world-class education that attracted the best and the brightest from across the world, manufacturing was not a very valuable part of the value chain. For example, the investments made in the 1960s into the US space program that led to the creation of integrated circuits and the ARPANET (the progenitor of the modern internet) paid dividends decades after they were made and led to the creation of companies like Apple, Microsoft, and Dell, and the 1990s economic boom in the United States.¹⁴ Although it took Japan thirty years to grant a patent on the integrated circuit, allowing for infringement in the meantime,¹⁵ without access to the innovation pipeline in the United States in general and Silicon Valley in particular it was American companies that were to dominate the first decades of the computer revolution.¹⁶

There appears to be significant change in the relative innovativeness of the United States and China. The latter has frequently globally been viewed as the most significant intellectual property “thief” that reaps where it has not sown.¹⁷ It has long been seen as both a mass manufacturer and significant consumer of goods that infringe upon every area of intellectual property law, be it patents, copyright, trademarks, or trade secrets. In recent years, the stance of the Chinese government in these matters has changed, and it has taken measures such as to reduce the problems previously associated with local judicial protectionism, difficulties in obtaining evidence, low damage awards, and the bias that courts were believed to exhibit against foreign entities.¹⁸ In no small part is this change being driven by both a maturation of the Chinese judicial system, as well as the fact that China is now, like the United States and Japan before it, producing too much valuable intellectual property not to protect it.

¹³ ARPANET was the technical foundation of the modern Internet funded by the Advanced Research Projects Agency of the United States Department of Defense.

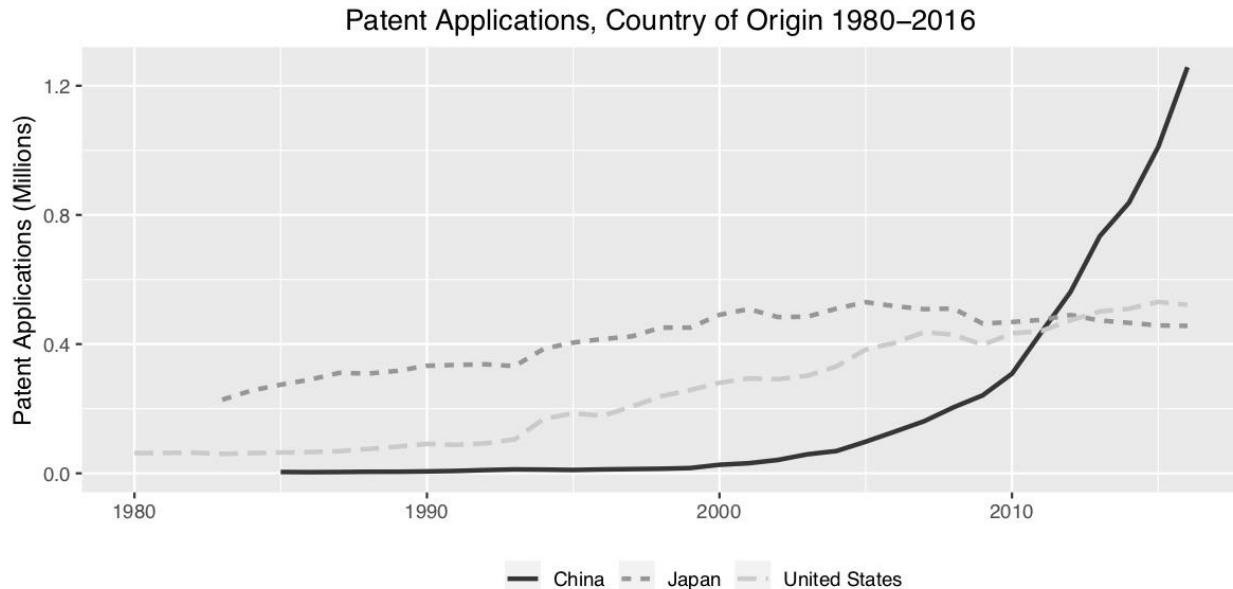
¹⁴ Paul Ceruzzi, *Apollo Guidance Computer and the First Silicon Chips*. Smithsonian Air and Space Museum, <https://airandspace.si.edu/stories/editorial/apollo-guidance-computer-and-first-silicon-chips>; Timothy Sturgeon, *How Silicon Valley Came to Be*, in MARTIN KENNEY, UNDERSTANDING SILICON VALLEY: THE ANATOMY OF AN ENTREPRENEURIAL REGION (2000); PAUL FREIBERGER & MICHAEL SWAINE, FIRE IN THE VALLEY: THE MAKING OF THE PERSONAL COMPUTER (2000).

¹⁵ Cf. John C. Lindgren & Craig J. Yudell, *Protecting American Intellectual Property in Japan*, 1 SANTA CLARA COMPUTER & HIGH TECH. L.J. 10 (1994).

¹⁶ Tracey Samuelson, *How the U.S. Outgrew 1980s Trade Anxiety over Japan*, MARKETPLACE (Nov. 29, 2018), <https://www.marketplace.org/2018/11/29/economy/how-us-outgrew-1980s-anxiety-over-japan>.

¹⁷ Peter K. Yu, *From Pirates to Partners: Protecting Intellectual Property in China in the Twenty-First Century*, 50 AM. U. L. REV. 131 (2000); Peter K. Yu, *From Pirates to Partners (Episode II): Protecting Intellectual Property in Post-WTO China*, 55 AM. U. L. REV. 901 (2006); Peter K. Yu, *Intellectual Property, Economic Development, and the China Puzzle*, in INTELLECTUAL PROPERTY, TRADE AND DEVELOPMENT: STRATEGIES TO OPTIMIZE ECONOMIC DEVELOPMENT IN A TRIPS PLUS ERA 173 (Daniel J. Gervais ed., 2007) [hereinafter “Yu, China Puzzle”].

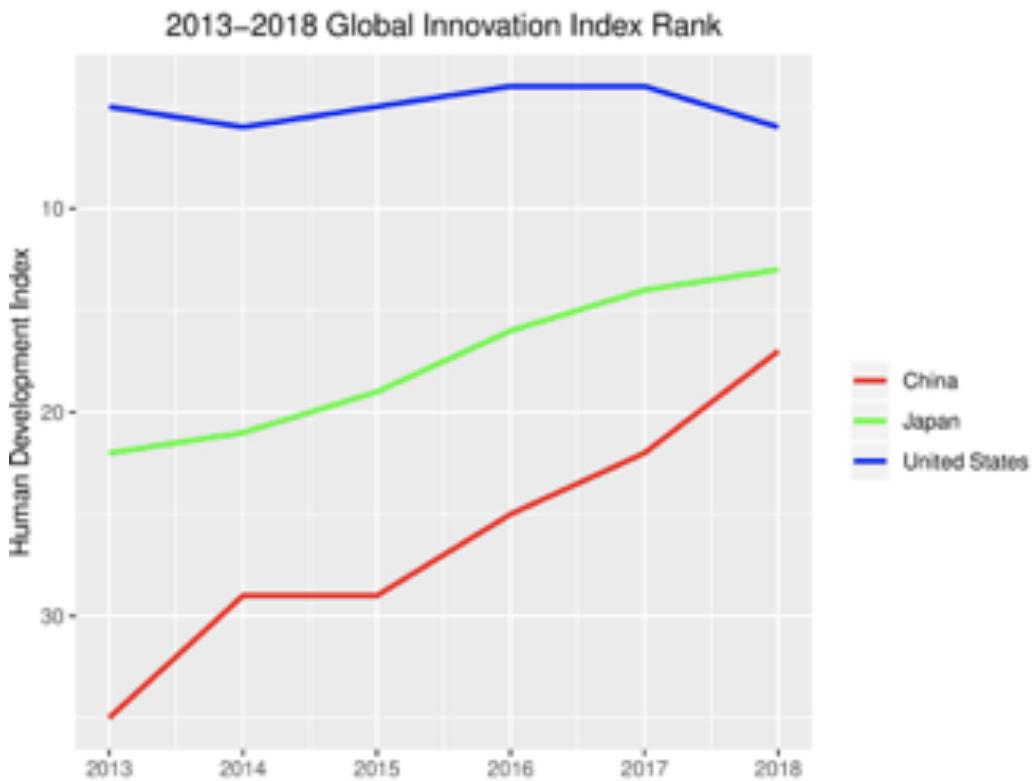
¹⁸ See William Weightman, *China’s Progress on Intellectual Property Rights (Yes, Really)*, DIPLOMAT (Jan. 20, 2018), <https://thediplomat.com/2018/01/chinas-progress-on-intellectual-property-rights-yes-really/>.



As shown in figure X, in 2016 Chinese entities applied for as many patents as Japan and the United States combined. This is important for two reasons. First, foreign policy-makers have to drastically change their views of the world. For example, when Apple adjusted its earning guidance, largely on poor sales in China, Larry Kudlow suggested that only intellectual property infringement by Chinese phone manufacturers could explain it.¹⁹ However, the idea of China as a source of only cheap, low-quality knock-offs is outdated. Supporting the idea that patent filings are showing an underlying change in innovation is that China is making rapid headway in broader measures of innovativeness, such as the Global Innovation Index, as shown in figure X.²⁰

¹⁹ See Fred Imbert, *White House Advisor Kudlow Says Apple Technology May Have Been 'Picked off' by China*, CNBC (Jan. 4, 2018), <https://www.cnbc.com/2019/01/04/white-house-advisor-kudlow-says-apple-technology-may-have-been-picked-off-by-china.html>

²⁰ CORNELL UNIVERSITY, INSEAD, & WORLD INTELLECTUAL PROPERTY ORGANIZATION, GLOBAL INNOVATION INDEX 2018, ENERGIZING THE WORLD WITH INNOVATION (2018).



The second reason why the drastic increase in patent filings is important is that the cases of the United States and Japan suggest that countries' views toward and willingness to enact as well as enforce intellectual property laws track their level of not just absolute but also relative economic development. The United States was resistant to adopting strong protections when it was in its early stages of development, wanting to borrow liberally from the fruits of earlier moving countries like Great Britain. Japan reacted the same way, initially wanting to benefit from its own earlier mover--the United States--until it reached a certain level of wealth. Today, Japan's intellectual property production is increasing at a rapid pace.²¹ Modern history is replete with examples in which the United States and Japan are in agreement and at times join forces when it comes to advocating for stronger intellectual property protections at both the national and international levels. The two countries emphasize intellectual property protections that weave together civil and criminal protections, and they advocate for the need for proper legal incentives for creation and invention. They both tend to favor a combination of greater sanctions and more powerful enforcement in the international arena, often clashing with countries that do not share the same priorities. China may have reached its own turning point as Chinese companies have begun to assert their own patents against companies and competitors in other countries, most notably perhaps, those in the United States. While China may have historically responded to threats and obligations accepted under international treaties (and even then far from the level that earlier-movers expected to see), other motivations now seem to be driving the country's behavior.

²¹ See Bloomberg, *Japan's Intellectual Property Generating Revenue at Record Pace*, JAPAN TIMES (Jan. 16, 2018), <https://www.japantimes.co.jp/news/2018/01/16/business/economy-business/japans-intellectual-property-generating-revenue-record-pace/#.W5AVq5NKu4> (noting that revenue from intellectual property increased by 74% over the previous five years and reached record heights in 2017).

A) Intellectual Property and Development in the United States

The Founding Fathers understood the importance of including an intellectual property system as they were drafting the Constitution, and they specified in the Intellectual Property Clause of the document that Congress must have the power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”²² This language was drawn from England’s Statute of Anne, which has since become known as “the source of Anglo-American copyright law”²³.

That said, and while the United States became an innovation hub in modern history that sought to advocate for the enforcement of international standards against intellectual property piracy, back in the nineteenth century the country “was a post-colonial nation, its cultural life derivative and its economy underdeveloped” which “declined to participate in international agreements. Only by the end of the nineteenth century, after the United States had joined the ranks of the world’s major industrial powers, did the government adopt legislation protecting the intellectual property of non-U.S. citizens.”²⁴ In that sense, there was some potential tension between the universalist, Enlightenment-motivated sentiments of the Founders that were embodied in the Constitution versus the narrower interest in pre-Constitution state copyright laws and post-Constitution national copyright laws proposed and passed by other politicians.²⁵

The United States initially refused to grant copyright protection to foreign authors, which especially hurt English authors; indeed, “[b]etween 1800 and 1860, almost half of the bestsellers in the United States were pirated, mostly from English novels.”²⁶ Some English authors, such as Charles Dickens and Anthony Trollope, managed to get special protections such that American publishing houses promised not to publish foreign works that were already subject to agreements between their authors and other American publishers, which enabled the authors to make money through so-called “courtesy copyright” even if they did not officially benefit from U.S. copyright laws.²⁷ This system eventually failed, as did initial attempts at bilateral treaties between the United States and Great Britain.²⁸ Congress ultimately did not grant protection to foreign authors until the 1870s, which also resulted in American authors experiencing the same discrimination in foreign countries.²⁹

Other nations alleviated the problem of protection for foreign works by joining the Berne Convention for the Protection of Literary and Artistic Works in 1886, a step that the United States did not take for over a hundred years, namely until 1989.³⁰ The importance of the Berne

²² U.S. Const., art. I, §8 cl. 8.

²³ Oren Bracha, *The Adventures of the Statute of Anne in the Land of Unlimited Possibilities: The Life of a Legal Transplant*, 25 BERKELEY TECH. L.J. 1427, 1427 (2010).

²⁴ Thomas Bender & David Sampliner, *Poets, Pirates, and the Creation of American Literature*, 29 N.Y.U. J. INT’L L. & POL. 255, 255 (1997) (citing AUBREY J. CLARK, THE MOVEMENT FOR INTERNATIONAL COPYRIGHT IN NINETEENTH-CENTURY AMERICA (1960)).

²⁵ See *id.* at 258 n.11.

²⁶ Peter K. Yu, *The Rise and Decline of the Intellectual Property Powers*, 34 CAMPBELL L. REV. 525, 534 (2012) (citation omitted) [hereinafter “Yu, Rise and Decline”].

²⁷ *Id.* at 534-35 (citation omitted).

²⁸ *Id.* at 535-36.

²⁹ *Id.* at 537-38 (citations omitted).

³⁰ For a discussion of the background and negotiations surrounding the Berne Convention, see Daniel Gervais, Golan v. Holder: *A Look at the Constraints Imposed by the Berne Convention*, 64 VANDERBILT L. REV. EN BANC 147 (2011).

Convention cannot be underestimated. It marked, to some, “the point at which the ramshackle and disorganized collection of bilateral treaties inevitably gave way to the rationality of a multilateral regime that established common standards of copyright protection.”³¹ It was also a time of uniting the civil and common law traditions of copyright--indeed, they were “brought together (and simultaneously tainted) in a treaty which stipulated the minimum conditions that signatories had to comply with.”³² All this said, some scholars warn that the shape and membership of the Berne Convention in 1885 were in no way inevitable, but rather hinged on many political forces and contingencies.³³

In the 20th century, the increase in the value of intellectual property led to the significant growth of legislation--accompanied and accelerated by lobbying in this area.³⁴ Robert Merges does not believe that lobbying needs to be a cause of concern *per se* because it is what one would expect when “intellectual property now constitutes a crucial set of corporate assets in the new information economy.”³⁵ He acknowledges that “in some cases increased expenditures may be cause for concern. Both public choice theory and empirical evidence suggest that some types of intellectual property legislation may be prone to excessive private-interest influence, or rent-seeking.”³⁶ In his view, these examples include the extension of copyright terms (which he deems to be almost exclusively the result of such rent-seeking) and special protection when it comes to computer databases.³⁷

Patents provide a particularly interesting area of study in the intellectual property public choice landscape. Scholars who conducted empirical research on patent lobbying expenditures and congressional behavior concluded, for example, that “Congress does not have a point of view independent from the stakeholders in the patent system. Rather, their votes on the Patent Reform Act of 2007, H.R. 1908, reflect the participation and preferences of major stakeholders, such as the information technology industry, the pharmaceutical industry, the law associations, and the manufacturing sector.”³⁸ This reflects a larger trend on the part of the pharmaceutical and biotechnological industries to advocate for stronger property rights, while large corporations specializing in software and information technology tend to prefer reduced protection.³⁹ The large software and IT companies fear “becoming hostage to small companies’ patents” and thus favor less stringent enforcement.⁴⁰ The public choice status of patent policy, however, remains in flux because the lobbying expenditures of the pharmaceutical industry that were already higher have been increasing at a faster clip than those of the IT industry.⁴¹ Given the flexibility of Congressmen

³¹ Lionel Bently & Brad Sherman, *Great Britain and the Signing of the Berne Convention in 1886*, 48 J. COPYRIGHT SOC’Y OF THE U.S.A. 311, 311 (2001) (citations omitted).

³² *Id.* at 312.

³³ *Id.* at 339-40.

³⁴ See Robert P. Merges, *One Hundred Years of Solitude: Intellectual Property Law, 1900-2000*, 88 CAL. L. REV. 2187 (2000).

³⁵ *Id.* at 2235.

³⁶ *Id.* at 2236.

³⁷ *See id.*

³⁸ Jay P. Kesan & Andres A. Gallo, *The Political Economy of the Patent System*, 87 N.C. L. REV. 1341, 1413 (2009).

³⁹ *Id.* at 1401.

⁴⁰ *Id.* at 1370.

⁴¹ *Id.* at 1359.

when it comes to their patent policy votes, this could eventually lead to legislative proposals to increase patent infringement sanctions and/or enforcement.⁴²

One of the tools of proponents of stronger intellectual property protections is also that, generally speaking, once laws with relatively low penalties are passed, it can become comparatively easier to raise said sanctions over time.⁴³ This has had dramatic effects especially in the copyright arena, where the law covered an increasing number of behaviors and toughened its sanctions--which included the use of statutory sanctions against large-scale file-sharers in ways that the drafters could have never predicted.⁴⁴ This ratcheting effect did not encounter significant pushback from individual citizens and large media companies until the introduction of the Stop Online Piracy Act (SOPA) and Preventing Real Online Threats to Economic Creativity and Theft of Intellectual Property Act (PIPA, or PROTECT IP Act), which both sought to address to a greater degree online IP offenses.⁴⁵ Around the same time, there was also public upheaval about the prosecution and suicide of Internet activist and IP infringer Aaron Swartz.

The last decade has thus brought with it a level of popular attention to and intervention into copyright policy that was essentially unprecedented. Patent policy, on the other hand, is still largely driven by the views of the big players. Most individuals generally do not become embroiled in patent infringement, but--as is the case for trademark infringement--this could change if technologies like 3D printing become more widely used and present new risks to intellectual property owners.⁴⁶

The political landscape of American intellectual property law has generally been dominated by growth in value leading to greater interest in protection. This expansion has not been entirely unbridled, as exemplified by safety valves such as the fair use doctrines in copyright and trademark law, or ultimately the popular pushback in the years leading up to and during the SOPA/PIPA era. The large intellectual property owners have also had public relations limitations placed on them, and, for example, the Recording Industry Association of America (RIAA) largely ceased pursuing individual users after popular backlash and the expenditure of significant amounts of legal fees in exchange for little recovery.⁴⁷

In the international context, however, and after its initial reluctance to join the Berne Convention at a time when the United States was a user rather than producer of original materials, the country has generally been one of the major advocates of stronger sanctions and greater enforcement because that is what it sees as promoting the interest of its intellectual property producers. Like international intellectual property scholar Graeme Dinwoodie has stated, “as the leading exporter of intellectual property in the world, the United States is a strong advocate for

⁴² See Irina D. Manta, *The Puzzle of Criminal Sanctions for Intellectual Property Infringement*, 24 HARV. J. L. & TECH. 469, 512 (2011) [hereinafter “Manta, Puzzle of Criminal Sanctions”].

⁴³ See Irina D. Manta, *The High Cost of Low Sanctions*, 66 FLA. L. REV. 157 (2014).

⁴⁴ See *id.* at 178 et seq.

⁴⁵ *Id.* at 186-93.

⁴⁶ See Irina D. Manta, *Intellectual Property and the Presumption of Innocence*, 56 WM. & MARY L. REV. 1745, 1780 (2015) (discussing this issue in the context of trademarks).

⁴⁷ See Manta, *Puzzle of Criminal Sanctions*, *supra* note ___, at 514 (citing Ray Beckerman, *Ha Ha Ha Ha Ha. RIAA Paid Its Lawyers More Than \$16,000,000 in 2008 to Recover Only \$391,000!!!*, RECORDING INDUSTRY VS THE PEOPLE (July 13, 2010, 11:26 AM), <http://recordingindustryvspeople.blogspot.com/2010/07/ha-ha-ha-hariaa-paid-its-lawyers.html>).

treaty membership and implementation.”⁴⁸ Indeed, the United States had by the twentieth century reached superpower status in the areas of technological development, as well as military and economic leadership, which led in 1994 to its advocacy for--among other treaties--the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS).⁴⁹ One of the goals was to provide a worldwide “disincentive to infringe patented products that were placed into the global stream of commerce.”⁵⁰

The trajectory of the United States’ role in treaty negotiation and adoption is not particularly subtle: At the beginning of the nation’s history, its role as an intellectual property user led to an appetite for free use of other countries’ works. As the United States developed economically and moved from being a later-mover to an earlier-mover, it began demanding that other countries respect the boundaries of its patented inventions, copyrighted works, and trademarked goods. It will likely continue to do so unless it experiences a tipping point in maintaining its pole position in the hierarchy of intellectual property producers.

B) Intellectual Property and Development in Japan

While the United States was arguably a later-mover vis-a-vis Great Britain in industrialization, Japan was an across-the-board later-mover when American gunboats under Matthew Perry in 1853 forcibly opened its markets to the world. A Japanese-American trade treaty was quickly followed by a series of similarly unequal trade treaties with other Western powers. Already beset by numerous domestic challenges and general dynastic decline the Tokugawa Shogunate did not survive the humiliation of the unequal treaties imposed upon it, and in 1868 it was ended by the Meiji Restoration.⁵¹ Coming after a period of Tokugawa dynastic decline, the unequal treaties galvanized young, reform-minded samurai to organize around the emperor to overthrow the Tokugawa Shogunate, and enact reforms that would safeguard Japan from the Western encroachment that Japan and other East Asian countries increasingly suffered. As one of its first acts, the new Meiji government in 1871 sent the Iwakura Mission to all Western countries with whom it had been compelled to sign treaties. Led by Tonomi Iwakura the mission had three goals: to make goodwill visits with the fifteen heads of state with whom Japan had been forced into diplomatic relations, to sound out these foreign governments on the possibility of renegotiating the unequal treaties Japan had been compelled to sign in the aftermath of the Perry Expedition, and, finally, “to learn firsthand about the West and ferret out its secrets for success.”⁵²

⁴⁸ GRAEME B. DINWOODIE, INTERNATIONAL AND COMPARATIVE PATENT LAW (2002).

⁴⁹ Simone A. Rose, *The Supreme Court and Patents: Moving Toward a Postmodern Vision of Progress*, 23 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 1197, 1220 (2013).

⁵⁰ *Id.* at 1221 (citing Todd Rowe, *Global Technology Protection: Moving Past the Treaty*, 4 MARQ. INTELL. PROP. L. REV. 107, 138 (2000) (identifying this task as the key reason for American negotiators to work with foreign ones to reach international intellectual property agreements)).

⁵¹ The Tokugawa Shogunate was the *de jure* feudal military government that governed Japan between 1600 and 1868. See Joseph R. Strayer, *The Tokugawa Period and Japanese Feudalism*, in STUDIES IN THE INSTITUTIONAL HISTORY OF EARLY MODERN JAPAN (John Whitney Hall & Marius B. Jansen eds., 1968). The Meiji Restoration, enacted by the Meiji government that succeeded the Tokugawa Shogunate, was the series of political, social, economic, and political reforms that created modern Japan, turning it from a feudal country to an industrialized, developed country. See WILLIAM G. BEASLEY, THE MEIJI RESTORATION (1972); JOHN H. SAGERS, ORIGINS OF JAPANESE WEALTH AND POWER: RECONCILING CONFUCIANISM AND CAPITALISM, 1830-1885 (2006).

⁵² JAMES L. MCCLAIN, JAPAN: A MODERN HISTORY 202 (2002) [hereinafter “MCCLAIN, MODERN HISTORY”].

While it might seem a long time ago today, the Meiji period continues to be important for modern Japan, especially when considering postwar industrial policy and intellectual property laws. Industrial policy goes back to the Meiji Era, as do the roots of the fabled Ministry of Commerce and Industry and its successor the Ministry of International Trade and Industry (MITI).⁵³ The Meiji Restoration also illustrates the level of institutional transformation required to successfully industrialize, and the comprehensive knowledge transfer that informed that institutional transformation.

The Iwakura Mission represents one of the most important, and most organized, campaigns of knowledge transfer in modern history. Assisted in its many ports of call by Japanese nationals sent out by the Meiji government to study in the West,⁵⁴ the Iwakura Mission generally quickly concluded meetings with the officials of host governments and then spread out to study the political, economic, and social systems of the countries they visited. Throughout their mission the members were animated by two questions: “First . . . How did the West come to arrive at its contemporary condition? To what, that is, could one attribute the wealth, power, and cultural achievements that seemed so evident everywhere in the United States and Europe. Second, how might the island nation of Japan . . . shape its own quest for modernity so that it too might enter the ranks of the world's advanced nations.”⁵⁵ Over the course of two years of close study of the West the Japanese commissioners found that the wealth and power they observed was the product of a specific historical process, which had given the West a significant lead over Japan. However, that lead appeared to be only some forty years, and it could be closed and overcome with the right policies.⁵⁶ One critical way in which that gap could be closed would be through education:

We clearly must have schools if we are to encourage our country's development as a civilized country, improve ordinary people's knowledge, establish the power of the state, and maintain our independence and sovereignty. . . . Our people are no different from the Americans or Europeans of today: it is all a matter of education or lack of education.⁵⁷

The conclusion was that among the many reforms the Meiji government had to make, education was among the most important. Already in 1872, before the end of the Iwakura Mission, the Meiji government created a modern school system, with four-year compulsory education for boys and girls, likely based on the observation that in the advanced West both boys and girls were educated. As in the West at the time, education was seen as a way to impart useful skills, inculcate loyalty to the national state, and promote nationalism,⁵⁸ and as such it was intimately linked with the

⁵³ CHALMERS JOHNSON, MITI AND THE JAPANESE MIRACLE: THE GROWTH OF INDUSTRIAL POLICY, 1925-1975 31 (1982).

⁵⁴ Ian Nish, *Introduction*, in THE IWAKURA MISSION IN AMERICA & EUROPE 8 (Ian Nish ed., 1998).

⁵⁵ MCCLAIN, MODERN HISTORY, *supra* note __, at 173.

⁵⁶ Marlene Rayo, *Rationality in the Meiji Restoration: The Iwakura Embassy*, in MODERN JAPANESE LEADERSHIP: TRANSITION AND CHANGE 357-58 (Bernard S. Silberman & Harry Harootunian eds., 1966).

⁵⁷ TAKAYOSHI KIDO, 4 KIDO TAKAYOSHI MONJO: THE PAPERS OF TAKAYOSHI KIDO 320 (1933); TAKAYOSHI KIDO, 2 KIDO TAKAYOSHI NIKKI: THE DIARY OF TAKAYOSHI KIDO 126-27 (1933).

⁵⁸ EUGENE WEBER, PEASANTS INTO FRENCHMEN: THE MODERNIZATION OF RURAL FRANCE 1870-1914 (1976); JOHN BOLI, NEW CITIZENS FOR A NEW SOCIETY: THE INSTITUTIONAL ORIGINS OF MASS SCHOOLING IN SWEDEN (1989); ANDY GREEN, EDUCATION AND STATE FORMATION: THE RISE OF EDUCATION SYSTEMS IN ENGLAND, FRANCE AND THE USA (1990); BENEDICT ANDERSON, IMAGINED COMMUNITIES: REFLECTIONS ON THE ORIGIN AND SPREAD OF NATIONALISM (2006).

overall Meiji project of attaining the “wealth and power” needed to survive in a hostile international system where the strong ate the weak.

The focus on education by the Meiji government is important for two reasons. On the one hand, human capital formation plays an important, if not critical, role in long-term economic growth.⁵⁹ In Japan, literate citizens broadly engaged in political agitation,⁶⁰ and then literate, increasingly independent, working women began to question their role in society.⁶¹ More narrowly, similar to what would happen in the rest of East Asia, cheap, literate female labor was the foundation upon which industrialized Japan was built;⁶² in much the same way that young women in the West some decades prior, and young women in China a century later, moved from rural areas to industrial centers, young women in Japan moved to work in the nascent industries that undergirded Japan's industrialization.⁶³ On the other hand, the importance of education illustrates the transformative change that the Meiji leadership undertook. Japanese development strategy was not limited to importing any specific technique, technology or body of science, as it was in, e.g., contemporary Khedivate Egypt.⁶⁴ The Meiji initiative to transform Japan was rooted in the Irukawa mission's perception that the West's “wealth and technological advances were the products of customs and institutions that were fundamentally different from those in China and Japan.”⁶⁵ Beyond education, Meiji reformers also sought to transform the legal system.

That law was fundamental to the functioning of a modern country and its economy was not a hard argument to make in nineteenth-century Japan. Impersonal law,⁶⁶ before which everyone was equal,⁶⁷ administrated by a meritocratic bureaucracy in a highly centralized state has deep roots in Chinese, and Japanese, political theory, thought, as well as practice.⁶⁸ However, law was primarily administrative and used to “maintain power and policy.”⁶⁹ It was seen as an “instrument for the complete control of all citizens by the government; punishments were made severe enough to have exemplary effect upon the whole people; stern surveillance over the feudal barons and people insured peace and order; and government control was applied to economic activities.”⁷⁰ In other words, the legal system filled a practical function, furthering the interests of a state. However,

⁵⁹ DAVID S. LANDES, THE WEALTH AND POVERTY OF NATIONS: WHY SOME ARE SO RICH AND SOME SO POOR (1999); Barbara Sianesi & John van Reenen, *The Returns to Education: Macroeconomics*, 17 J. ECON. SURVEYS 157 (2003).

⁶⁰ MCCLAIN, MODERN HISTORY, *supra* note 184-91.

⁶¹ See, e.g., SHARON L. SIEVERS, FLOWERS IN SALT: THE BEGINNINGS OF FEMINIST CONSCIOUSNESS IN MODERN JAPAN (1983); Barbara Sato, *The Moga Sensation: Perception of the Modan Gaaru in Japanese intellectual Circles During the 1920s*, GENDER AND HISTORY 363 (1993).

⁶² MCCLAIN, MODERN HISTORY, *supra* note __, at 248-53.

⁶³ Katrina Honeyman & Jordan Goodman, *Women's Work, Gender Conflict, and Labour Markets in Europe, 1500-1900*, 44 ECON. HISTORY REV. 608-28 (1991); LANDES, *supra* note __; HELEN MCNAUGHTON, WOMEN, WORK, AND THE JAPANESE ECONOMIC MIRACLE: THE CASE OF THE COTTON TEXTILE INDUSTRY 1945-1975 (2005); Felix Butschek. *The Role of Women in Industrialization*. WORKING PAPER SERIES 25, University of Applied Sciences of bfi Vienna (May 2006).

⁶⁴ LANDES, *supra* note __, at 403-07.

⁶⁵ SAGERS, *supra* note __, at 68.

⁶⁶ VICTORIA TIN-BOR HUI, WAR AND STATE-FORMATION IN ANCIENT CHINA AND EARLY MODERN EUROPE 103 (2005).

⁶⁷ *Id.* at 172.

⁶⁸ Kia-Ngau Chang, *The Influence of Legalism Upon Japanese Government and Economy*. 3&4 TSING HUA J. CHINESE STUD. 1 (1963). Cf. SAGERS, *supra* note __.

⁶⁹ Dan F. Henderson, *Evolution of Tokugawa Law*, in STUDIES IN THE INSTITUTIONAL HISTORY OF EARLY MODERN JAPAN 214 (John Whitney Hall & Marius B. Jansen eds., 1968).

⁷⁰ Chang, *supra* note __, at 10.

Japan's legal system seemed arbitrary to Western observers, and Meiji reformers realized that Japan could not hope to revise the unequal treaties imposed upon it until the country, in the eyes of the West, "became a nation governed in accordance with rational law."⁷¹ A constitution and legal system more recognizable by the West was needed and both were cobbled together largely using foreign models.⁷² Because it is easier to implement from scratch, Japan has a civil law system. The Civil Code was modelled on both German and French law,⁷³ while its Commercial Code was largely inspired by the German example.⁷⁴

The first patent law was created already in 1871, several years before the Civil and Commercial Code was finalized, but it was considered a failure and quickly abolished.⁷⁵ The promulgation of the law had been rushed because a patent system in general, and a patent system like that in the United States in particular, was seen as critical not necessarily to reward inventors but to encourage innovation.⁷⁶ In 1885, a new patent law was promulgated, and the ministry that would one day become MITI, rather than the Ministry of Justice, was given responsibility for patents. While Japan had bilateral treaties with a limited number of countries, it waited until 1899 to join the Paris Convention, which allowed foreigners to patent in Japan.⁷⁷ In 1899 Japan also joined the Berne Convention for the Protection of Literary and Artistic Works. This is, of course, similar to the United States not extending intellectual property protection to foreigners until quite late. To no small degree joining these conventions was part of the larger Meiji project of being released from "semicolonial status" and "acceptance into the comity of great power".⁷⁸

With regards to the development of intellectual property infringement and protection in Japan after the Meiji period (1868-1912), the picture is a bit muddled. In the pre-war period there was a well-functioning domestic market for patents in the years leading up to the Second World War, suggesting a well-ordered system.⁷⁹ Furthermore, not only did American companies such as General Electric register thousands of patents in Japan, Japanese innovations were frequently patented in the United States.⁸⁰ By the middle of the 1880s, patents per capita in Japan were rising rapidly, and over the course of forty years Japan went from 0.6 percent of the United States level to fifteen percent.⁸¹ Meiji-era investments in education and innovation paid quick dividends with increasing licensing of patents by Japanese to foreign companies and significant independent technical advances.⁸² In a qualitative and quantitative study examining "the role of domestic inventive activity versus international transfers of knowledge" Tom Nicholas find extensive

⁷¹ MCCLAIN, MODERN HISTORY, *supra* note __, at 184.

⁷² JOSEPH PITTAU, POLITICAL THOUGHT EARLY MEIJI JAPAN, 1868-1889 131 (1967); Daikichi Irokawa. *The Impact of Western Culture. in CULTURE OF THE MEIJI PERIOD* 132 (1988).

⁷³ HIROSHI ODA, JAPANESE LAW 113-17 (3d ed. 2009).

⁷⁴ Tomotaka Fujita, *The Commercial Code in Japan, in 2 CODIFICATION IN EAST ASIA: IUS COMPARATUM - GLOBAL STUDIES IN COMPARATIVE LAW* (Wen-Yeu Wang ed., 2014).

⁷⁵ Tom Nicholas & Hiroshi Shimizu, *Intermediary Functions and the Market for Innovation in Meiji and Taishō Japan*, 87 BUS. HIST. REV. 121, 136 (2013).

⁷⁶ *Id.*

⁷⁷ *Id.* at 137.

⁷⁸ MCCLAIN, MODERN HISTORY, *supra* note __, at 283.

⁷⁹ Nicholas & Shimizu, *supra* note __.

⁸⁰ Shigehiro Nishimura, *International Patent Control and Transfer of Knowledge: The United States and Japan Before World War II*, 9 BUS. & ECON. HIST. 9 (2011).

⁸¹ Nicholas & Shimizu, *supra* note __, at 130.

⁸² *Id.* at 132.

support for “the idea of a dynamic Japanese innovation sector”, and that “Japanese inventors drove the level and structure of inventive activity towards that observed in technologically advanced nations.”⁸³ In other words, in the pre-war period, the Japanese patent system was considered reliable by foreign companies, and far from simply reimplementing Western technology, Japanese companies were able to innovate independently.

Given the apparently good evidence for support for intellectual property protection, and, more significantly production, in Japan, the overall picture of intellectual property protection and infringement in Japan is muddled by the post-war complaints of widespread patent infringement and ‘unfair competition’.⁸⁴ John Lindgren and Craig Yudell stated in 1994:

According to recent Tokyo press reports, the United States and Japan are once again at war--this time, though, it is a "Patent War." Over the last decade, American companies have become extremely aggressive in seeking worldwide protection from infringement of their intellectual property. American corporations have recently focused their efforts on the high-tech companies of Japan. These American companies have gone beyond asserting U.S. patents against imports of Japanese companies in the United States and are now actively pursuing patent protection against Japanese companies in Japan itself. Those Japanese companies, of course, are responding in kind, spending large amounts of money and labor on patent acquisition, both in Japan and in the United States.⁸⁵

The authors present clear examples of what can perhaps charitably be called questionable behavior by Japanese companies, and by the Japanese patent office, chief among which is the thirty-year processing time for the Texas Instrument Kilby patent of the integrated circuit.⁸⁶ The thirty-year respite allowed Japan to develop its own semiconductor industry. That is not to say that it was a complete loss for Texas Instruments. Being awarded a patent in 1989, as opposed to 1959, proved lucrative to the company because Japan’s semiconductor industry was by the late 1980s several orders of magnitudes larger than it had been in the late 1950s and its royalties were correspondingly larger.⁸⁷ Given the technical proficiency and innovativeness of Japanese industry before the war, it seems unlikely that Japanese infringement was as widespread as claimed in American press. More likely is perhaps that while Japan had massive production capacity, a high capacity for innovation especially in cost and complexity reduction, but comparatively little intellectual property, the United States at the time had less production capacity, was less able or willing to produce at low cost, but had comparatively more intellectual property.⁸⁸ In retrospect it would seem that patents were wielded by American companies, and by extension the American government, to negate the Japanese later-mover advantage in high technology.

Over the course of the 1990s, headlines about Japanese-American patent wars disappeared when Japan entered its Lost Decade--a decades-long period of economic stagnation following the collapse of an asset bubble--even as it saw increasing competition from East Asian countries,

⁸³ Tom Nicholas, *The Origins of the Japanese Technological Modernization*, 48 EXPLORATIONS IN ECON. HIST. 272 (2011).

⁸⁴ See Robert B. Reich, *Is Japan out to Get Us?*, N.Y. TIMES (Feb. 2, 1992), <https://www.nytimes.com/1992/02/09/books/is-japan-out-to-get-us.html>

⁸⁵ Lindgren & Yudell, *supra* note __, at 2.

⁸⁶ *Id.* at 7.

⁸⁷ *Id.* at 8.

⁸⁸ *Id.* at 4.

chiefly perhaps South Korea and Taiwan, and the United States took a commanding lead in the computer revolution, with companies like IBM, Intel, Microsoft, Hewlett Packard, Dell, and Apple able to leverage the unique innovation pipeline of Silicon Valley.⁸⁹ With the acquisition and production of vast amounts of intellectual property, not least the copyrighted material owned and produced by the film and music studios bought by Japanese companies, Japan in the 1990s found itself, like the United States before it, with less and less production capacity relative the rapidly expanding value of its intellectual property.⁹⁰ After a decade of antagonism, the Japanese and United States government cooperated on strengthening intellectual property protection, domestically, as well as through a series of global agreements. Later-mover Japan had by the 1990s become an earlier-mover relative the rest of East Asia in general, and China in particular.

C) Intellectual Property and Development in China

While 2018 saw the fortieth anniversary of the beginning of the Opening Up and Reform Era in China, it also saw the anniversary of another series of reforms that were in some ways more consequential, the 1898 Hundred Days of Reform. Thirty years after Japan's Meiji Restoration the Qing Dynasty began its own, ultimately aborted, reforms to self-strengthen.⁹¹ Those ultimately failed to have an effect, with the emperor who initiated them *de facto* deposed and key would-be reformers punished. The continued dynastic decline and popular hardship set off an increasingly frantic search for a solution to China's travails. As miseries multiplied, intellectuals became ready to jettison any knowledge or traditional practice that did not promote the national imperative of restoring China's wealth and power. As had been the case in Japan, regardless of provenance, any knowledge or practice that had practical value would be adopted.⁹² While Japan had seemed a promising model to many, in the end the Soviet Union's anti-imperialism and success in "turning a poor agrarian economy into an industrial powerhouse" made communism the more attractive model to China.⁹³

In the early twentieth century, the model of the Soviet Union seemed to offer the fastest method for achieving wealth and power. The acceptance of Marxist-Leninism was in the case of China never slavish, and the leadership has throughout been willing to learn from foreign, and domestic,⁹⁴ examples and experiments. Like Japan, China made full use of the later-mover advantage as it used, experimented with, and implemented successful social, economic, and political policy. This instrumental-rational approach to governance appears to have borne fruit.

⁸⁹ See Tracey Samuelson, *How the U.S. Outgrew 1980s Trade Anxiety over Japan*, MARKETPLACE (Nov. 29, 2018), <https://www.marketplace.org/2018/11/29/economy/how-us-outgrew-1980s-anxiety-over-japan>.

⁹⁰ Sadao Nagaoka, *Determinants of High-Royalty Contracts and the Impact of Stronger Protection of Intellectual Property Rights in Japan*, 19 J. JAPANESE & INT'L ECONS. 233, 235 (2005).

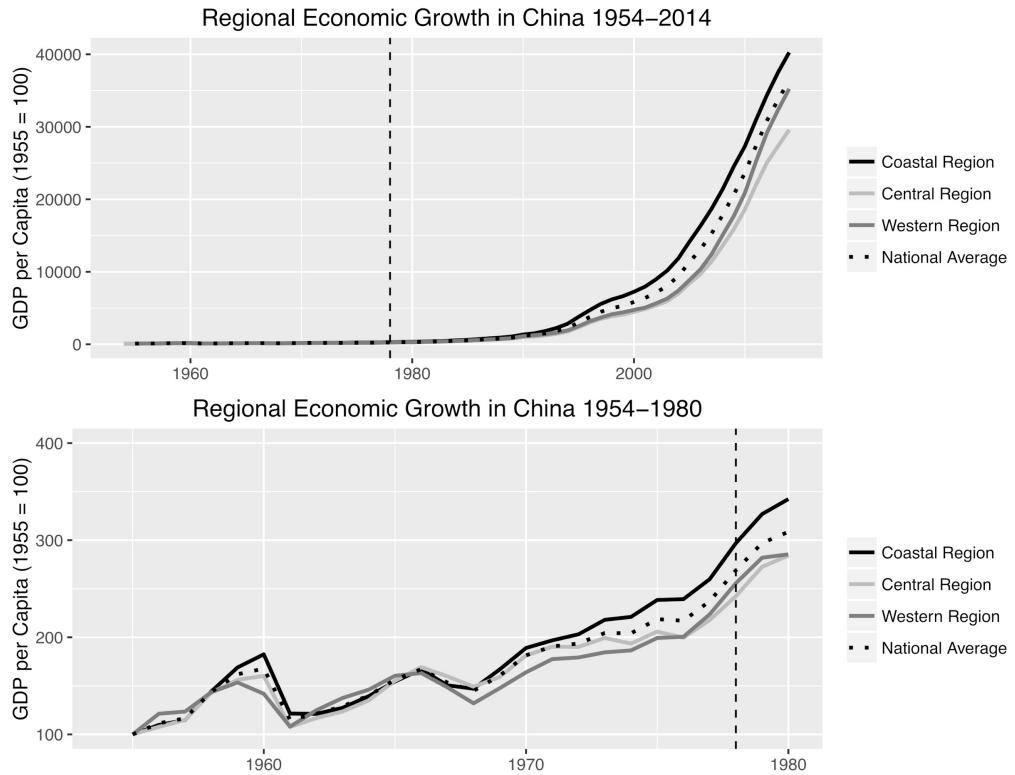
⁹¹ Cf. Shiping Hua, *The Meiji Restoration (1868) and the Late Qing Reform (1898) Revisited: Strategies and Philosophies*, 21 EAST ASIA 3 (2004).

⁹² ORVILLE SCHELL & JOHN DELURY, *WEALTH AND POWER: CHINA'S LONG MARCH TO THE TWENTY-FIRST CENTURY* (2013).

⁹³ NILS GILMAN, *MANDARINS OF THE FUTURE: MODERNIZATION THEORY IN COLD WAR AMERICA* 42 (2003).

⁹⁴ Cf. Sebastian Heilmann, *Policy Experimentation in China's Economic Rise*, 43 STUDIES IN COMPARATIVE INT'L DEV. 1 (2008); Sebastian Heilmann, *Policy-Making Through Experimentation: The Formation of a Distinctive Policy Process*, in *MAO'S INVISIBLE HAND: THE POLITICAL FOUNDATIONS OF ADAPTIVE GOVERNANCE IN CHINA* (2011) (Sebastian Heilmann & Elizabeth J. Perry, eds.).

The first thirty years of the new republic saw massive basic infrastructure investments, human capital formation, and the creation of a manufacturing base. While these investments all would become important for the explosive economic growth in the last decades of the twentieth century,⁹⁵ the human capital investments of the early decades would play a particularly large role.⁹⁶ China had begun the twentieth century with one of the lowest literacy rates among twenty to twenty-four year olds and by the time of the Opening Up and Reform Era it had among the young literacy rates similar to those of the West.⁹⁷ By the time of the reform era Chinese labor was cheap as in low-cost, but highly qualified compared to other developing countries outside of East Asia.



In terms of economic growth, the significant difference between the pre- and post-reform era was stability of growth, not the absence and presence of growth itself. The average yearly economic growth rate between 1953 and 1978 was 6.5%; between 1978 and 2008 this number was 9.9%. Either number puts China in line with the economic growth of the Four Tigers in the same time period. The significant difference between the two time periods was that before 1978, economic growth rates were subject to wild swings, with a 50 percentage point difference between peaks and troughs.⁹⁸ These swings were the most violent in the first twenty years and from the end of the 1960s GDP per capita grew consistently. As shown in figure X, the apparent lack of

⁹⁵ Y. Y. Kueh, *The Maoist Legacy and China's New Industrialization Strategy*, 119 CHINA Q. 420 (1989).

⁹⁶ JEAN DREZE & AMARTYA SEN, INDIA: ECONOMIC DEVELOPMENT AND SOCIAL OPPORTUNITY 73-75 (1995). See also Amartya Sen, *Passage to China*, N.Y. Rev. Books (Dec. 2, 2004), <https://www.nybooks.com/articles/2004/12/02/passage-to-china/>; Amartya Sen, *What China Could Teach India, Then and Now*, CITIGROUP & ASIA SOCIETY GLOBAL ISSUES SERIES (Feb. 17, 2005), <https://asiasociety.org/amartya-sen-what-china-could-teach-india-then-and-now>.

⁹⁷ Ottervik, *supra* note ____.

⁹⁸ Shaoguang Wang, *Steadfastly Maintain Our Direction and Explore New Roads: Sixty Years of Socialist Practice in China*, 31 SOC. SCIS. IN CHINA 21 (2010).

economic growth before the Reform and Opening Up era is largely a product of the scale of the cumulative post-Reform economic growth.⁹⁹ While GDP per capita for any year might be arguable, the trend is congruent with social development, which correlates highly with GDP per capita, as well as agricultural productivity improvements.¹⁰⁰ Furthermore, as argued by Amartya Sen and others, the economic growth of China is the product, not the driver, of human capital investments made over long periods of time. China chose a development strategy that in its broad strokes was not too dissimilar from that of the rest of East Asia, which is to say significant upfront investments in education, agricultural productivity, and economic equality, with largely similar long-term results - high economic growth.

Unlike China's economic development, China's modern legal system is a more recent phenomenon. At the foundation of the People's Republic, large parts of the country had been outside the control of the central government for decades, and state-building--along with the construction of a legal system--was a critical task for the new government. The first decade of the new republic was largely one of institutionalization and legalization with the promulgation of the first constitution in 1954, and with the building of a judicial system. The 1960s and early 1970s by contrast saw extensive deinstitutionalization and deprofessionalization.¹⁰¹ By the 1980s two thirds of all judges lacked law degrees, and before the 1995 Judges' Law "judges in China were not treated as legal professionals".¹⁰² The reason why such a small percentage of judges had a judicial education was that in 1982 the newly reopened Ministry of Justice had, after some legal training, assigned 57,000 "outstanding army officers" to the court system.¹⁰³ These judges were complemented by about 200,000 "judicial workers", who were to serve as what might be called "barefoot" lawyers.¹⁰⁴

In China, as in Japan, Rule by Law is a tradition with long roots, and the judicial system filled primarily an administrative, as opposed to judicial function.¹⁰⁵ After 1995, the judicial system was quickly professionalized, and the percentage of judges with legal degrees increased from 7 percent in 1995 to 56 percent in 2006.¹⁰⁶ For the first decades after the Opening Up and Reform Era China was, for most intents and purposes, without a recognizable judicial system. In the years leading up to and following China's accession to the WTO, the government made strenuous efforts to provide broader legal training, but the relationship between judicial and administrative power in China will be complex for the foreseeable future.¹⁰⁷

⁹⁹ China Data Center, University of Michigan, *China Data Online*, <https://www.china-data-online.com/> (last visited Jan. 11, 2019).

¹⁰⁰ Chris Bramall, *Origins of the Agricultural "Miracle": Some Evidence from Sichuan*, 143 CHINA Q. 731 (1995); Zhun Xu, *The Chinese Agriculture Miracle Revisited*, 47 ECON. & POL. WEEKLY 51 (2012).

¹⁰¹ Kam C. Wong, *The Police Legitimacy Crisis and Police Law Reform in China: Part I*, 6 INT'L J. POLICE SCI. & MGMT. 199 (2004).

¹⁰² Weixia Gu, *Courts in China: Judiciary in the Economic and Societal Transitions*, in ASIAN COURTS IN CONTEXT 495 (Jiunn-Rong Yeh & Wen-Chen Chang eds., 2014).

¹⁰³ JONATHAN SPENCE, THE SEARCH FOR MODERN CHINA 705 (1991).

¹⁰⁴ *Id.* 'Barefoot' refers to the 'barefoot doctors', individuals who during the 1960s received medical training, but not a degree, and then travelled from village to village to tend to medical needs. *See id.*

¹⁰⁵ Thomas Carothers, *The Rule of Law Revival*, 77 FOREIGN AFFAIRS (March/April 1998); Weixia Gu, *Courts in China: Judiciary in the Economic and Societal Transitions*, in ASIAN COURTS IN CONTEXT 487 (Jiunn-Rong Yeh & Wen-Chen Chang eds., 2014).

¹⁰⁶ Weixia Gu, *Courts in China: Judiciary in the Economic and Societal Transitions*, in ASIAN COURTS IN CONTEXT 503 (Jiunn-Rong Yeh & Wen-Chen Chang, eds. 2014).

¹⁰⁷ Jerome A. Cohen, *China's Legal Reform at the Crossroads*, 2 FAR EASTERN ECON. REV. 26 (2006).

As was the case in Japan some 110 years previously, a discussion of the role of patents in economic development had taken place before the creation of a modern legal system in China.¹⁰⁸ A law protecting the proprietary rights of an inventor had been promulgated in the early 1950s, but it was superseded in 1963 by new regulations which emphasized the importance of freely sharing information.¹⁰⁹ In 1978, the rights of an individual inventor was once again recognized, but the tension between individual reward and social benefit created extensive debate.¹¹⁰ As was true in Japan a century earlier, the patent system was seen as a means to promote invention, and not to reward individual inventors; inventors received a limited monopoly as remuneration for their work or “distribution according to labor.”¹¹¹ A patent was seen as a relative right, not an absolute right, and the 1984 Patent Law stipulated that “not only is the patentee obligated to work the patent, but the government may grant a compulsory license to a party who exhibits a need to make use of the patented technology”.¹¹² Trademarks were, similar to patents, first legally regulated in the early 1950s. Exclusive use was abolished in 1963, with trademarks becoming a signifier of quality rather than the mark of a given manufacturer.¹¹³ A 1980 analysis found that the 1963 regulations had largely not succeeded in safe-guarding quality, and by 1983 a new Trademark Law was promulgated, with the express purpose of encouraging manufacturers to grow sales and profits by developing consumer demand for their products.¹¹⁴

The purpose of the 1984 Patent Law was two-fold: in the (then) near term, to encourage knowledge transfer by foreign companies by offering them intellectual property protection, in the medium term to encourage domestic invention and innovation, and, in the very long term, by ensuring reciprocal protection, protecting Chinese intellectual property from expropriation by foreigners.¹¹⁵ Intellectual property protection in China was then, as had been the case in Japan, not something imposed from the outside, but rather chosen for its instrumental value. That is not to say that foreign pressure to strengthen intellectual property protection has not been critical for its development, but the domestic factors behind the strengthening of intellectual property protection are numerous.¹¹⁶

Hand-in-hand with China’s economic development, strengthening of domestic (and increasingly exported) brands, and investments (and returns to) domestic research and development, China has joined international intellectual property treaties.¹¹⁷ Initially a quiescent observer, China has become increasingly active in international organizations as well as has established bilateral relations in the same way the United States and the European Union has.¹¹⁸

¹⁰⁸ L. Mark Wu-Ohlson, *A Commentary on China’s New Patent and Trademark Laws*, 6 NW. J. INT’L L. & BUS. 86 (1984-85).

¹⁰⁹ *Id.* at 89-90.

¹¹⁰ *Id.* at 90, 93.

¹¹¹ *Id.* at 94.

¹¹² *Id.* at 95.

¹¹³ *Id.* at 110.

¹¹⁴ *Id.* at 113.

¹¹⁵ *Id.* at 91-92.

¹¹⁶ Yu, China Puzzle, *supra* note ____.

¹¹⁷ Peter K. Yu, *The Middle Kingdom and the Intellectual Property World*, 13 OREGON REVIEW INTERNATIONAL LAW 209, 222 (2011).

¹¹⁸ *Id.* at 223-50.

The Trump administration's complaints of rampant intellectual property infringement by China¹¹⁹ are largely the same as U.S. complaints during the 1980s: "During the 1980s and 1990s, the United States repeatedly threatened China with economic sanctions, trade wars, nonrenewal of most-favored-nation status, and opposition to China's entry into the World Trade Organization (WTO)."¹²⁰ As discussed above, for most of this period China was without a judicial system comparable to that found in the West. U.S. and Western complaints of intellectual property infringement were not hard sells in China because strong intellectual property protection was from the beginning seen as fundamental for long-term economic growth throughout the reform era. In 2006 President Hu Jintao remarked that "the building of China's system of intellectual property right and vigorously upgrading the capacity of creation, management, protection and application regarding intellectual property are our urgent need for the purpose of enhancing independent and self-driven innovation capabilities and building an innovation-oriented country."¹²¹ In other words, intellectual property production and protection were seen by the top leadership as critical to China's future economic development. Ten years later, strengthening intellectual property rights production and protection was a cornerstone of Made in China 2025, China's now-downplayed industrial policy.¹²²

As shown above in figure X, China's policy to increase intellectual property production has borne fruit as trademark and patent applications by Chinese entities have surpassed that of American or Japanese entities. While the quality of some, or even many, of the patents might be debatable, what is important is that in high tech, as shown by strategic patenting,¹²³ a large quantity of patents has a quality all its own. A large patent portfolio is protection against legal aggression by competitors, and Chinese companies are building large patent portfolios for their protection.¹²⁴ In the same way that U.S. intellectual property suits compelled Japanese companies to acquire and develop their own considerable arsenal of intellectual property--if for no other reason than as a defense--Chinese companies now seem to be in the same situation. Given the accelerating rate at which Chinese companies are accumulating patents, this will likely have significant consequences over time in that China could become as enthusiastic an enforcer of its intellectual property rights overseas as the United States and Japan have been in the recent past.

III. Analysis

In the decades after the Second World War, "Made in Japan" was considered a bit of a joke and a signifier of poor or inferior quality, but that changed in the 1980s when highly competitive Japanese car and consumer electronics manufacturers made headway in the global and American

¹¹⁹ U.S. Trade Rep., *supra* note ____.

¹²⁰ Yu, Rise and Decline, *supra* note ___, at 529.

¹²¹ *Id.*

¹²² Sidney Leng & Yangpeng Zhen, *Beijing Tries to Play Down 'Made in China 2025' as Donald Trump Escalates Trade Hostilities*, SOUTH CHINA MORNING POST (Jun. 26, 2018), <https://www.scmp.com/news/china/politics-politics/article/2152422/beijing-tries-play-down-made-china-2025-donald-trump>.

¹²³ Dietmar Harhoff et al., *The Strategic Use of Patents and Its Implications for Enterprise and Competition Policies*, ESMT Berlin Report (2007),

<http://ec.europa.eu/DocsRoom/documents/3427/attachments/1/translations/en/renditions/pdf>

¹²⁴ See, e.g., Charles Clover, *Xiaomi to Buy 1,500 Patents from Microsoft*, FINANCIAL TIMES (Jun. 1, 2016) <https://www.ft.com/content/9ecc1416-27c9-11e6-8b18-91555f2f4fde>.

market. A veritable cottage industry of books critical of Japan and ‘unfair’ Japanese competition sprung up overnight,¹²⁵ and U.S. presidential candidates openly mused about whether Americans would be reduced to sweeping the dust from around Japanese computers.¹²⁶

By the 1990s, some of the fear of Japanese takeover had subsided as the investments made decades earlier paid dividends in the United States in the form of the (American) personal computer revolution, and Japan entered its Lost Decade in the aftermath of the collapse of an asset price bubble.¹²⁷ What also changed was that Japan by the late 1980s found itself with an earlier-mover advantage in many industries, and was facing increasing competition from later-movers, especially perhaps from South Korean companies. Furthermore, Japanese companies had acquired significant stakes in film and music studios with global sales, and therefore had an incentive to safeguard intellectual property rights globally. With more intellectual property to protect, Japan became, like the United States before it, an enthusiastic supporter of an international intellectual property regime.

China, whose pillorying by American policy makers and media arguably resembles that meted out to Japan some decades earlier, now seems to be in a similar transition as precipitous increases in the production of intellectual property has been accompanied by increasingly robust intellectual property protection, and enforcement of that protection. China appears to be following the path trod by the United States and Japan to become a serious defender of intellectual property rights. This dynamic of intellectual property infringement or protection being a function of the relative value of protecting one’s own intellectual property or infringing upon that of others’ has important implications for earlier-movers, like the United States, which perceive themselves to have an edge over apparent competitors in the area of intellectual property. However, the creation of an intellectual property regime that protects the earlier- from later-movers could be problematic if the roles are ever reversed. If the hierarchy of movers shifts, the relative interest in intellectual property enforcement will as well--and China could seek to protect its goods against infringement by the likes of the United States and Japan some day.

The change in China’s stance is not surprising considering that widespread international outsourcing of manufacturing has made intellectual property key assets for private companies, strengthening tendencies of earlier-movers to formulate and demand enforcement of strict intellectual property laws. Because Chinese companies like Huawei, Lenovo, Xiaomi, along with many others, now have valuable brands and intellectual property of their own, it was only to be expected that China’s intellectual property regime will be strengthened. This is not to say that China’s leadership was previously insensitive to the importance of intellectual property for the functioning of a modern economy. As discussed above, a patent law was implemented in the early days of reform, even before there was a modern, or even recognizably functioning, judicial system. The law had been debated for years and was implemented strictly to promote China’s domestic technological and economic development.¹²⁸ This would suggest that countries like China respond

¹²⁵ Cf. Robert B. Reich, *Is Japan out to Get Us?*, N.Y. TIMES (Feb. 2, 1992), <https://www.nytimes.com/1992/02/09/books/is-japan-out-to-get-us.html>

¹²⁶ James Reston, *Mondale’s Tough Line*, N.Y. TIMES. (Oct. 13, 1982), <https://www.nytimes.com/1982/10/13/opinion/washington-mondale-s-tough-line.html>.

¹²⁷ Tracey Samuelson, *How the U.S. Outgrew 1980s Trade Anxiety over Japan*, MARKETPLACE (Nov. 29, 2018), <https://www.marketplace.org/2018/11/29/economy/how-us-outgrew-1980s-anxiety-over-japan>.

¹²⁸ Wu-Ohlson, *supra* note ____.

not only to exogenous pressure from earlier-movers like the United States and Japan to increase intellectual property protection.

While the focus of this analysis is on intellectual property, it should be noted that the most critical knowledge transfer to Japan and China was not proprietary knowledge, but rather institutions. When the United States pilfered the intellectual property and proprietary knowledge of European entities, whether it was private companies wantonly reprinting the works of British authors or the government encouraging illicit transfer of knowledge through migration of engineers,¹²⁹ it had a largely similar institutional framework as their European victims.¹³⁰ Western countries shared largely representational governments, some form of rule of law, near-universal education, the high levels of gender equality implicated in development,¹³¹ and an Enlightenment heritage. The differences that existed between Western countries paled in comparison to the difference between any given Western country and nineteenth century later-movers like Japan, China, or Turkey. Once committed to development, Japan and China transformed their social, political, and economic institutions.¹³² Outside of Japan and China, other East Asian countries sought--and achieved--similar transformations, for the same motivation of enriching the nation and strengthening the military.¹³³ Turkey, by contrast, under Ataturk sought similar transformative change, but was ultimately never able to fully transform itself, or its economy, in the way that Japan and China did.¹³⁴

Both Japan and China show how later-movers have an advantage vis-à-vis earlier-movers, can learn from the successes and failures of earlier-movers, and--through selection and adaption of development policy, institutions, and technology--can catch up with earlier-movers. The examples of both these countries, Japan and China, aligns with Justin Yifu Lin's argument that that the explanation for China's rapid economic development can be found, at least partly, in its later-mover, or latecomer, advantage:

[A] latecomer country in the catching up process can borrow technology, industry, and institutions from the advanced countries at low risk and costs. So if a developing country knows how to tap the advantage of backwardness in technology, industry, and social and economic institutions, it can grow at an annual rate several times that of high-income countries for decades before closing its income gap with those countries.¹³⁵

¹²⁹ Bingchun Meng, *Property Right or Development Strategy?: Protection of Foreign Copyright in 19th Century America and Contemporary China*, MEDIA@LSE Electronic Working Papers No. 11 (2007) <https://core.ac.uk/download/pdf/93515.pdf>; Kat Eschner, *How Industrial Espionage Started America's Cotton Revolution*, SMITHSONIAN MAG. (Dec. 20, 2017), <https://www.smithsonianmag.com/smart-news/how-industrial-espionage-started-americas-cotton-revolution-180967608/#38tqlhFr6EAO7lkA.99>.

¹³⁰ See e.g. Dani Rodrik, *Institutions for High-Quality Growth: What They Are and How to Acquire Them*, 35 STUDS. IN COMPARATIVE INT'L DEV. 3 (2000).

¹³¹ WORLD BANK, ENGENDERING DEVELOPMENT: THROUGH GENDER EQUALITY IN RIGHTS, RESOURCES, AND VOICE (2001).

¹³² MARIUS B. JANSEN, *THE MAKING OF MODERN JAPAN* (2000); JONATHAN SPENCE, *THE SEARCH FOR MODERN CHINA* (1991).

¹³³ Cf. ORVILLE SCHELL & JOHN DELURY, *WEALTH AND POWER: CHINA'S LONG MARCH TO THE TWENTY-FIRST CENTURY* (2013); WILLIAM G. BEASLEY. *THE MEIJI RESTORATION* Ch. XIV (1972).

¹³⁴ Cf. ANDREW MANGO, *ATATURK: THE BIOGRAPHY OF THE FOUNDER OF MODERN TURKEY* (2002).

¹³⁵ Justin Yifu Lin, *The China Miracle Demystified* (Aug. 19, 2010),

http://siteresources.worldbank.org/INTMOZAMBIQUE/Resources/China_Miracle_Demystified.pdf

Selective and purposeful knowledge transfer then seems to lie at the heart of successful development. For policy-makers who are interested in long-term economic competitiveness, it would therefore be worthwhile to look beyond the immediate problems of intellectual property infringement to better understand the policies that support the political, economic, and scientific development of the “unfairly” competing country. As Japan and China found early on, copying current technology has little long-term value. What they needed, and what they implemented, for their development was the institutions that would allow them to innovate, to produce their own intellectual property.

Conclusion

The examples of the United States, Japan, and China suggest that countries’ views toward and willingness to enact as well as vigorously enforce intellectual property laws often track their level of not just absolute but also relative economic development. These countries saw rapid economic growth by first identifying and then building the human and physical infrastructure needed to sustain growth, and then, selectively, by means fair and foul, learning from other countries. When the edge regarding useful intellectual property lay with others, these countries tended to, or at least were perceived to, inadequately protect the intellectual property of more developed countries. As later-mover countries developed, their intellectual property protection laws also became increasingly comprehensive. They additionally became more likely to enforce their intellectual property in other countries. With economic growth, countries that previously acted as industrial spies and infringers of others’ intellectual property seem to become stalwart defenders and maintainers of (their) intellectual property rights.

The implication of the above is likely that in the long run, while intellectual property protection is important, production is equally if not more important. It is not protection of intellectual property alone that will allow any country to maintain an edge vis-a-vis other countries. Nor is historical innovation likely to much use in the future. Long-term economic competitiveness appears to be predicated on a capacity to develop new science and technologies. That capacity appears to be a product of institutional frameworks. To the extent that an overemphasis on protection of old intellectual property distracts from examination of the policy initiatives that have catapulted a later-mover to be able to compete, unfairly or not, with an earlier-mover, that emphasis could prove to be highly disadvantageous in the long term.

Taking a longer perspective of the protection of intellectual property rights and the role they play in the development of earlier- and later-movers, suggests that while they are important, they implicate several policy areas, and should not be considered in isolation. As demonstrated by the case of Japan and China, rapid development is a multi-faceted process, requiring study and coordination of social and economic policy. It would stand to reason that competing with, or keeping pace with, a rapid developer would require the same effort. In 2012, Peter Yu hinted at the possibility that “[t]he changing dynamics in the global economy and the improved technological capabilities in China therefore could result in a role reversal.”¹³⁶ The years since then, and the developments in the U.S. and Chinese political landscapes, may engender this result faster than might have been predicted.

¹³⁶ Yu, *Rise and Decline*, *supra* note __, at 556.