What May Validate Intellectual Property in a Traditional Chinese Mind? Examining the U.S.-China IP Disputes through a Historical Inquiry

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ABSTRACT

One of the most significant issues of today’s world is the intellectual property (IP) dispute between the developing countries and the developed. The TRIPs and the IP policies of the developed countries in the rest of the world have been vehemently criticised because the interests of the poor are not treated equally. Under this background, academic researches on the validation of IP laws shall not merely examine whether the developing countries are applying IP laws in line with the demand of the developed but try to scrutinize whether the current international IP regime per se can be validated.

This paper will examine from China’s perspective the extent to which an IP regime reflecting high international standards can be validated in developing countries. Two aspects will be analyzed together: first, my recent research on the indigenous development of intellectual property concepts in pre-modern China; second, the U.S.-China IP negotiation since the 1980s.

As this paper will point out, social and legal practice recognizing intellectual property rights (IPRs) developed in China long before our modern times began. However, quite contrary to the 16th-17th centuries Western Europe where guild monopoly was strong, in China the IPRs and the public interests were to a certain degree within balance and there has never been developed a strong property-focused justification comparable to the IP rhetoric created by London booksellers in the early 18th-century England. Although the pre-modern China’s IP practice is far from perfect, it helps us to understand why China was once the leading global figure in terms of education, technology and economy. This is constructive: a good IP system shall not merely start from protecting the IP owners but from protecting both the interests of the IP owners and the users of the intellectual works.

The U.S.-China IP negotiation since the 1980s does not take into consideration the above historical inquiry. So far, China has been viewed by the U.S. as a total alien of IPRs. The U.S. therefore actively plays a role of ‘missionary’, indoctrinating the Chinese with the present American IP perspectives which leans to the interests of its dominant industries. The result is that the U.S. has forced China to produce a high level IP regime favouring the U.S. interests while in practice China is reluctant to fully enforce these laws, fearing that these laws may stifle its own energy of creativity.

The above analysis will suggest that to promote their own knowledge economy, the developing countries must think more deeply about the validation of IP regime from the perspective of ‘balance’ rather than the IP theories put forward by the developed countries. The developing countries therefore shall have more rights to design their own IP regime reflecting some internationally workable common grounds.
1. Introduction

One of the most significant issues of today's world is the intellectual property (IP) dispute between the developing countries and the developed. A notable phenomenon is, as Assafa Endeshaw has pointed out, that the international IP frameworks and the IP policies of the developed countries in the rest of the world lean to protecting the interests of rather the rich than the poor. Under this background, academic researches on the validation of IP laws shall not merely examine whether the developing countries are applying IP laws in line with the demands of the developed but scrutinize whether the current international IP regimes per se can be improved to benefit the developing countries more.

This paper tries to join the above discussion from two points. First, it will examine the U.S. role during the U.S.-China IP negotiations since the 1980s, by which I will suggest that the U.S. main focus in the negotiations was how to gain considerably more access to the huge Chinese market for its intellectual products rather than how to help China to develop domestically suitable IP laws to boost China's knowledge-based economy. A consequence is that some principles influenced by the U.S. guide the lawmaking in China to an extent that China's own interests might be hampered. This resulted in great debates about the validation of China's new software regulation 2002, which had a potential danger of lifting China up to a level of overprotection that even the U.S. would be unwilling to reach.

Secondly but more importantly, this paper will point out that one of the most important approaches of solving the validation impasse is to give more space to the developing countries to have their say because, as Susan Sell and Peter Drahos have demonstrated, the existing international IP lawmaking is mainly influenced by the lobbying of some powerful Western companies. I will further argue that such an approach particularly requires detailed examinations on the cultural and historical experiences or lessons of the developing countries. As to China, my recent studies suggest that, quite contrary to the conventional views, culturally and historically pre-modern China was not alien to the concepts and practices of IP; but China's IP episodes, which were as immature as those of its European counterparts though, did not conflict with social welfare and had never got a chance to develop towards a strong property-focused approach comparable to the IP rhetoric artificially created by London booksellers in the early 18th-century England, since then putting so much influence on our modern IP landscapes.

This paper will conclude that a "new path" out of the impasse of IP validation problems could begin from "new discourses", which shall allow the developing countries to speak more based on their historical, cultural and social experiences and requirements.

2. Within a Problematic International IP Framework: The U.S.-China IP Negotiations
2.1 To validate what? A Problematic International IP Framework

Among hot IP topics, the discussion of how IP systems can be validated in the developing countries are frequently directed to the point that how those countries can be brought up to the international levels of IP protection, with which the developed countries can be satisfied. The U.S. academic researches on China's IP issues have concentrated popularly on China's piracy problems. Chinese media and newspapers in the last ten years were very enthusiastic about reporting the achievements China had made to approach WTO standards and TRIPs requirements. Even many ordinary Chinese people may have felt upset if they heard the news that China's accession to WTO would be delayed because of its IP issues.

However, examining the impasse of IP validation in developing countries from only this point ignores a fundamental question: are the present international IP regimes represented by the TRIPs Agreement and the IP policies of the developed countries in the rest of the world consummately established?

As revealed by the Report of the Commission on Intellectual Property Rights (UK 2002, hereafter Report 2002), there is still a long way towards satisfaction if we want to use IP laws to help the world meet the targets of reducing poverty, helping to combat disease, improving the health of mothers and children, enhancing access to education and contributing to sustainable development in the developing countries.4

There are various deficiencies existing in the current IP regimes. A general problem is that, by quoting Graham Dutfield and Uma Suthersanen, "overprotection" of the IP owners.5 The balance seems to be over and, as the prominent academic lawyer, Lawrence Lessig, said, a feeding frenzy has taken its place.6 As far as the developing countries are concerned, the consequence of the overprotection tendency is the imbalance between the interests of the developing countries and the developed. That the TRIPs Agreement took shape by reference, largely, to the needs of the U.S. economy (and to a lesser extent that of the other major industrialized countries) makes the imbalance worse.7

Can the TRIPs Agreement and the IP policies of the developed be beneficial to the developing countries? A common economic argument is that if the developing countries can provide the developed with stronger IP protection, they will get greater linkages to globalization processes.8 The problem of "egoism" is well reflected in the above-mentioned economic argument: if you accept, I will let you in. It does not criticize the existing international IP regime per se and only views such a regime as something that the developing countries must follow. It avoids asking to what extent can the developing countries affordably provide stronger IP protection to satisfy the developed countries and then to get in return greater access to the global market chain controlled by the developed countries.9 A common concern is that standards of IP protection that may be suitable for developed countries may cause greater costs than benefits when applied in developing countries.10

Although the TRIPs Agreement provides minimum standards to accommodate different situations of different countries, these standards are strong and may be still difficult for some developing countries to cope with.11 Another problem is that regional and bilateral agreements that encourage developing countries to adopt higher standards of IP protection beyond TRIPs can undermine the multilateral system by limiting use by developing countries of flexibilities and exceptions permitted in TRIPs and other treaties.12
More importantly, the crucial issue in respect of IP is perhaps not whether it promotes trade or attracts foreign investment to combine with the cheap labours of the developing countries.\(^ {13}\) Eventually, developing countries will need to produce and create by themselves. However, as far as the domestic knowledge creativity of the developing countries are concerned, it is only likely that some of them will become greater sources of innovation in the case of closer integration with global sources of technology by providing stronger IP protection.\(^ {14}\) But when and, again, at what costs?\(^ {15}\)

It is not to say that the developing countries are entirely unable to improve their domestic welfare and knowledge-based economy under TRIPs and other existing international IP regimes. The point is we need to make things better. Thus, the issue of how IP systems can be validated in developing countries is not as simple as how those countries can meet the standards established by the TRIPs Agreement and satisfy the requirements put forward by the developed. The examination of this issue is *de facto* equal to renovating current IP regimes to benefit the developing countries more.\(^ {16}\)

Unfortunately, as the following discussion will demonstrate, during the U.S.-China IP negotiations taking place since the 1980s, the U.S. main focus was how to gain considerably more access to the huge Chinese market for its intellectual products rather than how to help China to develop domestically suitable IP laws to boost China's knowledge-based economy, although it is not to say that China's interests were entirely ignored or China was totally unable to safeguard its own rights.

### 2.2. For whose benefits? The U.S.-China IP negotiations

It is widely known that in recent years China has introduced new IP laws to meet the TRIPs requirements. So far, China has increasingly made many efforts to enforce those laws, some of which are even above the minimum standards required by the TRIPs Agreement.\(^ {17}\) However, on 26\(^ {th}\) October 2005, the U.S. expressed its dissatisfaction by announcing to initiate a special process under WTO rules to obtain information on China's intellectual property enforcement efforts. As the U.S. Trade Representative (USTR) Rob Portman explained, "based on all available information, piracy and counterfeiting remain rampant in China despite years of engagement on this issue."\(^ {18}\) If problems cannot be smoothly solved, probably the U.S. and China will start a new run of more complicated IP negotiations.

To a certain degree, it may not be sound to analyze the disagreement between China and the U.S. by a mere examination of China's piracy problems, particularly when taking into consideration the U.S.-China IP negotiations taking place since the 1980s.

Since the U.S.-China IP conflict, the U.S. vigor of reining in the "dragon" is a result of not only the desire of cracking down Chinese pirates but the strong greed for the greater value of the giant Chinese market. For instance, it was articulated by the U.S. Semiconductor Industry Association in the 1990s that the USD 2 billion semiconductor market in China, estimated to be growing at 20% per year, represents a *major* opportunity for the U.S. industry.\(^ {19}\) The U.S. would certainly have felt distraught when its potential interests were not swelling but terribly shrinking at the hands of Chinese pirates.\(^ {20}\)

To expand its economic interests and global power, the U.S. has been very aggressive in pushing for a universal intellectual property regime.\(^ {21}\) In 1988, the U.S. Congress implemented the Omnibus Trade and Competitiveness Act, which provides a Special 301 to
promote strong protection of its IPRs in foreign countries. By such a policy the U.S. escalated its wars with China in the 1990s by non-renewal of Most Favoured Nation status, opposition to entry into the WTO, and most seriously, trade sanctions of repeated threat of billions of import tariffs. The results were China's concessions represented by the 1992 Memorandum of Understanding (MOU), the 1995 Memorandum of Agreement (1995 Memorandum), the China Implementation of the 1995 Intellectual Property Rights Agreement (1996 Accord), and eventually China's sophisticated new IP machine.

It is not surprising that the U.S. ambitions are reflected in these series of negotiations. The 1995 Memorandum asks greater access to Chinese market for American recordings and films, and the lifting of Chinese quotas on imported movies. American filmmakers and recording firms will be allowed to produce films or music recordings in China through joint ventures. The 1996 Accord includes China's pledge to open its market to American movies, music, and computer software by immediately removing all related import quotas. Such access is rather prodigious, as compared with China's domestic productivity with regard to intellectual goods. But the U.S. drafts of the above agreements even required more, some of which exceeded the scope of IP protection.

It is not to say that China shall not take serious actions to solve its piracy problems. However, as far as China's access to knowledge and its own knowledge-based economy are concerned, it is doubtful that the U.S. position has contributed much if we bear in mind that China at any rate remains to be a developing country. It is not easy for China to establish in a short period a sophisticated modern IP regime which takes about a century to complete in the West. During the U.S.-China negotiations, China believed that the U.S. was making excessive and unreasonable demands, and asked the U.S. to show flexibility. Chinese officials argued that the U.S. should not expect China, a developing country, to comply with the IP standards of the U.S., a highly industrialized nation. China also argued that because pharmaceutical and chemical products are often critical to sustaining human life, industrialized countries have an obligation to share these advantages with developing countries.

It is understandable that every country is upon its economic strategy eager to obtain more profit abroad and is sensitive to safeguard its citizens' investment. However, for the U.S. industries, China's market is really an issue of less or more profits; but for China, access to knowledge and knowledge-based economy could be its lifeblood. It is really not necessary for the U.S. companies to sell their software and VCDs at incredibly expensive prices if they do not obsessively desire to grab the Chinese market. At any rate, the loud voice of the U.S. interests which drowns China's cry is to a great extent "imperialistic", lack of integrity, and unfair.

2.3 China's software regulation 2002: overprotection loses its validation

China's purpose to validate its IP systems is not simply a result of the U.S. pressure. Its commitment to WTO would not have happened without its own confidence believing that its knowledge-based economy, which aims to improve its social welfare, will be effectively developed. Since 1979, China's leader Deng Xiaoping and his adherents repeatedly reminded the country to re-establish IP laws immediately to stimulate domestic industries. A "Torch Program" was established by China's State Science and Technology Commission to promote the commercialization, industrialization, and globalization of China's new technologies. Notably, China has recently enacted several new measures, including the establishment of special IP departments, networks, and self-protection systems, to stimulate
Chinese products' competitiveness on the local and international market. China also attempts to make its patent system more accessible to its people. Even under the current international IP regime which does not very much favour the interests of the developing countries, China can still make more flexible choices that most developing countries cannot: its surplus of capital makes it capable not only of purchasing IPRs from abroad, but of investing extensively in domestic R&D. In fact, China is already the highest investor in R&D in the developing world.

Given China's ambition to use IP system to boost its economy, it is unlikely that China reads its new IP laws only by following the U.S. will. The following discussion of the fierce debates about China's new software regulation 2002 will indicate that the validation of IP system must be subject to China's own status quo.

A common headache for the software, music and movie industries is free copying by end-users. China's Regulation of Protection of Computer Software 1991 (hereafter, Regulation 1991) provided big space for free copying under the principle of fair dealing, which from time to time unfairly caused damages to the copyrighters. In 2002, China drafted a new Regulation of Protection of Computer Software (hereafter, Regulation 2002), which took effect just twenty days after China's WTO accession. It replaces the Regulation 1991 and, by Article 17 and Article 30, significantly narrows the scope of fair dealing. But its vague language might extend liability to all end users. Vehement debates rose immediately, in which the U.S. was criticized for its "imperialism" to push China into a supreme protection level against non-commercial end-users. It was said that while the software prices remain extremely high for individuals, clutching at them means nothing but a disaster for education and access to knowledge.

Notably, Professor Shou Bu of Shanghai University established a "Three Steps Theory", by which he argued that Regulation 2002 might put China on the third step – "ultra-protection" – when some more developed such as Japan and Taiwan are still on the second step, i.e., "reasonable protection". He argued that it is thus improper for China to exceed the reasonable level and bear the liabilities outside the bounds of international norms.

Shou's argument has been positively supported by many others. For instance, Dr. Fang Xing-dong, a magnate of China's IT industry, consequently released a comment on ten relations between IPRs and public interests; Professor Wang Xian-lin, a noted expert of anti-monopoly laws, repeatedly urged China to establish a comprehensive anti-monopoly system so as to protect public interests and stimulate continuous innovations. Such debates attracted the whole society and eventually, in 2002, gave birth to a book named I Appeal, in which various famous scholars reiterated the importance of the level of protection and anti-monopoly.

Further efforts were made to provide more detailed tacks for China's knowledge-based strategy. It is articulated that China's IP protection shall accord with "one base, two goals and three principles". The base of China's IP system is to respect and reasonably protect IPRs. Two goals mean that China's IP regime shall benefit the transmission of knowledge and facilitate human being to share the welfare of knowledge accumulation. Three principles are: (1) IP system shall be in line with the status quo; (2) the public interests such as public health shall take precedence of private rights; and (3) national interests shall be prior to private interests.
In addition, a noted Chinese commentator Jiang Qi-ping has argued that attentions could be paid to the establishment of an innovation law or at least a system that encourages the publicity of information and knowledge so as to promote effective transmission of knowledge. Jiang deems that these measures will increase the social productivity when knowledge is better understood and utilized.  

The debates eventually saw a victory in autumn 2002 when the Supreme Court's new Interpretation on the new Copyright Law provides, by Article 21 of the Interpretation, that the liability of end-users indicated in Regulation 2002 shall be limited to commercial users only.

Although the overall atmosphere and the theoretical framework exposed in the relevant debates remains to be notably emotional and ideological, it is noteworthy that by debating the liability of end-users contemporary Chinese society has initiated a deeper contemplation on the function of IP regimes, particularly the TRIPs. It is now realised that, aside from the metaphysical justification of IP per se, the pivot of IP function must be a balance between private rights and public interests, which shall be determined by the social and economic status quo of each country.

To sum up, the U.S.-China IP negotiations reflect a common phenomenon that the interests of the developing countries are not properly considered by the developed; it is however unlikely that China's new IP system will be validated domestically without benefiting China's own social welfare and knowledge-based economy. As a result, there probably will be continuous battles between the U.S. pressure and China's own demands in the future.

3. BEYOND THE WESTERN LOBBYING: CAN CHINA'S IP HISTORY SPEAK?

3.1 The loud voice of the Western lobbyists and a negative Chinese image

How to solve the impasse and validate IP laws in China and other developing countries for their own sake? Report 2002 gives out a fundamental principle: developing countries should not be deprived of the flexibility to design their IP systems that developed countries enjoyed in earlier stages of their own development, and higher IP standards should not be pressed on them without a serious and objective assessment of their development impact.

However, the reality in today's international IP policymaking is that too often the voices of the powerful industries and companies in the developed countries dominate in the evolution of IP policy. In the developed world, there exist powerful lobbyists who argue that all IPRs are good for business, benefit the public at large and act as catalysts for technical progress and, therefore, more IPRs must be better. Even the TRIPs Agreement is branded with lobbyist mark. As Susan Sell's detailed studies demonstrate, that the interests of the developing countries are not equally considered by the TRIPs Agreement can be attributed to a phenomenon that TRIPs is a result of lobbying by twelve powerful CEOs of multinational corporations who wished to mould international law to protect their markets. Peter Drahos's five hundred interviews provide further evidence to reveal how a small group of lobbyists and the American national interests wrote the charter for a new global information order and how
developing countries are deterred. In this context, the voice of the developing countries often sounds weak.

I would like to argue that why the voice of the developing countries can only cry in the wilderness is largely attributable to a fact, except that the developing countries normally do not have enough IP experts to join the international conversations, that the Western society has for a long time established a strong impression to view the developing countries as a blank form in which historically and culturally no IP practice has ever been filled at all; as long as the European IP history is said to be unique and informative, it is not really necessary to consider the experiences or lessons elsewhere because otherwise inspirations will be only proved to be no more than exiguous.

Behind the loud voice of the Western lobbyists, there exists a pile of historical, cultural and economical analyses favouring internationally strong IP protections, seating the "blank mind" from the developing countries in the corner of the classroom to listen rather than speak. Among those analyses, the most morally powerful tactics to make the developing countries tongue-tied is to accuse them of stealing the intellectual fruits of the developed and lacking the consciousness of viewing it as guilty. It is said that the Western society, by sharp contraries, has long established a tradition of respecting the intangible property and natural rights of the creative individuals. The U.S., as Professor James Boyle has pointed out vividly, is particularly active in standing up morally for the rights of the original genius of Western inventors and authors.

So far, the most rampant pirate, China, has been widely labelled by the Western society as a total alien of IP concepts. Such an impression largely comes from Harvard Professor William Alford, one of the most respected contemporary Chinese legal scholars who wrote a book named To Steal a Book is an Elegant Offense: Intellectual Property Law in Chinese Civilization. There are two main arguments in Alford's book: first, strict political control gave little room for the growth of private rights associated with publishing, commerce and technological inventions; second, past played a crucial role in Chinese cultural life, making unauthorised imitation and reproduction be tolerated. Alford's book has been overwhelmingly cited. Although he reminds his readers that creativity was not unknown in Chinese culture and there were some desires of IP protection in pre-modern China, most commentators only go too far to say that Chinese tradition is entirely hostile to IP system and only favours imitation and, quite naturally, piracy.

These comments unfortunately do not actualize Alford's desperate desire to reduce the U.S.-China IP conflicts. Chinese history and culture has been vehemently and even unscholarly condemned and denied any possibilities of constructively joining the international IP conversations. The consequence is that it further promotes the U.S. to actively play a role of "missionary" in China, lobbying the Chinese with the present American IP perspectives which leans to the interests of its dominant industries. Repeatedly it is suggested that the U.S. non-governmental organizations shall interfere the change of IP landscape in China. Two NGOs, the International Intellectual Property Alliance (IIPA) and the Business Software Alliance (BSA), have taken a dedicated interest in China and provocatively lobbied quite successfully. These two NGOs are coloured with U.S. background: the IIPA, which reports to White House and the Senate subcommittees and makes recommendations to the USTR with regard to the U.S. global IP interests, is an umbrella organization for seven private trade associations, "each representing a significant segment of the U.S. copyright community"; the BSA, a member of IIPA, is a software industry trade organization with ten "worldwide members", all of which are software companies incorporated or headquartered in the U.S.
A severe result of the U.S. strategy of cultural and moral condemnation is that the public opinions are always distracted from the economic issue inhered in the IP disputes to moral blame upon the evil Chinese pirates who steal the Western mental labours' fruits without any mercy. Although many piracy problems must be stopped, we cannot ignore the economic fact that, as reported by over half of China's surveyed software companies, the primary reason that software is pirated in China is because consumers do not have enough income to purchase legal copies. It is very difficult for an individual to spend a considerable part of his salary to buy a single copy of software. Even if that person could afford such a product, he or she might not be interested in doing so.

3.2 Balance: the implications of China's IP history

Is Chinese IP history really so sterile and negative? Despite the fact that China is viewed in the Western academic sphere as an alien of IP, it is noteworthy that more than a decade ago Professor Zheng Cheng-si, the most erudite IP scholar of China, explicitly expressed on various occasions his disagreement with Alford. As Zheng pointed out, there are evidences suggesting that copyright as private right developed in China after the invention of printing technology.

My recent trans-disciplinary studies give me an opportunity to engage in more detailed examinations of China's IP history. As the following discussion will briefly indicate, Chinese IP history cannot be simplistically described in an Alford's manner; it at least has two significant implications: first, pre-modern China is not an exception of IP practice developed in tune with cultural, commercial and technological evolutions, which require exclusive rights to be granted on creative intellectual products associated with creativity and monetary investment; secondly but more importantly, pre-modern China's IP practices, which although may be more immature than those of pre-modern Europe, accommodated the IPRs and the public interests in balance to a notable extent and it had never got a chance to develop towards a strong property-focused approach comparable to the IP rhetoric artificially created by London booksellers in the early 18th-century England, which influenced so much our modern IP landscapes.

It is noteworthy that in his book Alford only fully cited one historical data concerning a little about Chinese copyright element. Without referring to detailed historical information, Alford's argument heavily relies on a widely employed research method established since Max Weber, who did not study China as such but only treated China as an antithesis to highlight the achievement of the modern West. Under Weber's method or at least a simplistic use of it, researchers often reach a common conclusion, arguing that why China did not indigenously walk into modernization is imputable to the reason that the cultural elements Europe had must be unique and have no counterparts elsewhere.

However, when the East Asian society started to develop at a rapid speed since the 1960s, Western scholars turned from a metaphysical debate about the inability of Chinese culture to seeking more evidence to explain why Confucian society moved so quickly? One of the fruits of this reconsideration is that various Western scholars now incline to view human responses to homologous environment as more or less similar, even if there exist in different societies different ideas and motives. To take this methodology into consideration, the emergence of IP should not be examined, in a general context, from the point of cultural differences, but
from the nature of knowledge and knowledge products and their background, in which social, commercial and technological evolution of mankind society took place.

Unlike tangible things, the most distinctive nature of the intangible knowledge is that it can be infinitely and identically reproduced without detracting the initial one. When knowledge is actualized as knowledge products such as books and machines, these products can also be duplicated infinitely and identically. A serious problem will immediately follow when knowledge creations or inventions are associated with investment, either in the form of money or mental creativity. Reproduction by a person other than the investor may damage the investment of the later because without initial investment unauthorised copiers or, more conventionally, pirates can produce inferior copies to damage the investor's reputation, and cheaper ones to compete with the investor with more advantages in the market. Therefore, when mankind society evolved to a degree to which this problem inhered within the nature of knowledge and knowledge products became obvious, demands of protecting exclusive rights on intellectual products appeared.

Take an example of an early IP history of Europe first. The copyright privileges granted in France before the early 16th century are based on inevitable claims from authors and/or publishers who wanted fair return for their expenditure of time, skill and money spent in composing and publishing; these claims increased because the spread of printing technology made the investment involved in publishing become crucial. Patent system was created initially in Venice to stimulate inventors to bring to the society new things without the fear of losing their investment of time and money. Trademark may have had emerged much earlier. When commercial activities evolved to certain degree, the importance of trademark attached to commercial goods became obvious because without trademarks people cannot identify a particular product to its original manufacturer. It is deemed that trademark initially served a function to protect the consumers and carry governmental duties of supervision; but soon the intangible values attached to the marked goods became something manufacturers and merchants must hold in their hands. These IP practices, which are associated with privilege, guild monopoly, Crown's power and often abuses and unfairness, seem to be pre-modern and immature. However, their emergence did come from an unavoidable choice of mankind society, which evolved to an extent that a good market order for knowledge products associated with investment must be maintained.

3.2.1 Copyright, trademark and patent-alike model

Pre-modern China's IP history is not entirely heterogeneous to its European counterparts. Copyright practice could be a best example. Copyright protection did not immediately follow after the invention of printing technology in the 9th century. It is not until the expansion of commercial publishing industry did copyright protection become urgent. Initially copyright as exclusive right was granted to authors to protect their reputations. This happened because plagiarism, bowdlerization and pseudopigraphy caused by commercial publishers' unauthorized reprinting frequently damaged the reputations of Chinese authors who, as I have recently demonstrated, adhered to a long tradition of praising originality and authenticity. When monetary investment increased in tune with the expansion of commercial publishing, condemnations on piracy became more common and legal protections were granted to authors and/or publishers to secure their monetary investment. As several judgements of the 13th century indicate, originality, author's reputation and commercial investment were well recognized as being the ground of granting copyright. As many evidence suggest, such practice did not disappear until the establishment of China's first Copyright Law in 1910.
The role of government controls in the publishing industry shall not be exaggerated to deny the existence of copyright. These controls, occasionally ridiculous, mostly remained in special areas to prevent potential social rebel, strengthen national security, and reduce apparent fallacies of the poorly printed books, which encouraged slipshod habit of lazy examinees and then jeopardized the certain statecraft they must have mastered.82

Chronologically, trademark practice began at the very early stage of Chinese civilization. In addition to the same function of protecting consumers and performing governmental policies, individual rights also evolved at the same time. Trademarks, which widely appeared on potteries, lacquers, textiles and metal products, often transmitted aesthetic beauties to prove good quality and attract customers; advertisements identifying the origins of products were commonly used. These practices expanded when medieval China reached its economic zenith, making the exchange of goods across the whole empire more frequent. In particular, printing technology may have promoted the distribution of trademarks together with the goods when trademarks were duplicated on paper copies.83

An extreme noteworthy phenomenon is that from the first half of the 16th century when embryonic capitalism started to emerge initially from the richest region of Jiangnan (south-east Yangtze River covering Shanghai and Suzhou),84 trademark protection became more inevitable and obvious.85 Local business associations, particularly those of the textile industry prospering mostly in Lower Yangzi River region, often established regulations to manage trademark issues. A notable example is that the Regulation of Shanghai Textile Industry Association of 1825 formulated a systematic pailü (Trademark Regulation), providing clearly workable procedures for the registration and approval of trademarks, the rights of trademark-originators, license and trademark transfer, and penalty clauses. This Regulation was also supplemented with a well-organized registration book (paipu), in which various types of confusions were explicitly mentioned and strictly prohibited.86 Trademark lawsuits and legal protections also became more frequent. As some existing legal judgements of the late 17th century and early 18th century ruled, trademark confusion and passing off were understood as something that must be strictly prohibited by justice because only by trademarks can the goods be identified and in practice those marks had for a long time been treated as capital of their owners who had their reputations fused in marks.87

Exclusive rights on inventions may have had existed even earlier than trademarks. However, in China this practice was less mature than that of copyright and trademark. It is largely similar to the early Venetian form of family craft secrets. This model is not entirely unreasonable because in pre-modern society most inventions occurred not because of individual comprehensive studies of scientific theories or talented instantaneous brainstorm but under continuous handicraft manufacturing from generation to generation. Therefore, the time, efforts and money invested into the inventions, or more properly, technological improvements, are rather successively cumulative. It is reasonable to assume that many inventions in various Chinese small industries were stimulated by the model of family craft secret.88

There are lots of evidences suggesting the Chinese attitude of respecting the "sage" inventors. However, explicit attitudes of laws and judgements towards exclusive rights on inventions are much more difficult to be found as compared with those relating to copyright and trademark. Disputes about exclusive rights on inventions could be rare probably because even in the most innovative land of China,89 pre-industrial inventions were much less frequent than publishing
and trade and, unlike a book or a trademark, many secret skills are notably much harder to be unauthorizedly duplicated.  

A written patent law to China was also not as imperative as it was to Europe. Firstly, the emergence of patent system in Europe is initially designed to stimulate inventions in a circumstance that inventions were very scanty. But China had a longer history of producing much more inventions than Europe did. An explicit law to stimulate inventions, therefore, seems to be not absolutely necessary. It is noteworthy that the effect of a written patent law is not always remarkable in pre-industrial societies: the great majority of the patented inventions of the 15th-16th centuries Venice do not have commercial success; only a few are important enough to provoke infringements and official intervention. 

More importantly, in addition to the family secret model for stimulating and promoting inventions, China applied a multiple mechanism which enabled government to stimulate and attract most of the important inventions relating to social benefits, and their effective transmission across the giant territory. But the Europe had a very different situation: the small and separated kingdoms made it difficult to absorb technologies without some heavy costs. The intention of establishing patent systems in many countries, such as England and Germany, is not to stimulate innovations but to attract foreign technologies existing already in other countries such as Venice. Such a desire rose because industrial progress in most European nations such as England was less developed than several relatively advanced, which probably owed to the higher civilization of the East. Without an explicit patent law the introductions of foreign technologies would be impossible because there was a death penalty awaiting Venetian glass blowers who attempted to practice their art abroad in the 15th century because the main craft of Venice was glass-making and the Venetian government was very cautious in protecting it. As a result, the majorities of patent grants in England in the sixteenth and during much of the seventeenth century were for patents of importation.  

In addition, a statistic review of the early European patents can tell that the majorities of the patents were granted to simple technologies, which were far below the level of Chinese inventions if we follow Needham's comparison; in China it is not necessary to create a patent system for those technologies which were so crucial to the social benefits because they were mainly promoted by government.

However, the less significance of patent-like practice in China cannot deny the fact that at any rate exclusive rights on inventions, as it took the model of family craft secret, existed and were to some degree recognized as being legitimated in pre-modern China because the mental and monetary investment involved were realized to be important.

3.2.2 Non-monopoly, transmission of knowledge and social welfare

If we stop our historical inquiry here, China's experience will mean nothing but potentially favouring strong IPRs and even natural rights supported by many global companies. However, as the following will demonstrate, the existence of IP practices must be examined in a much broader social context to see its relationship with social welfare.

A noteworthy phenomenon of pre-modern China's IP practices is that monopoly associated with IPRs was not significant. The notion of monopoly was generally disfavoured by Chinese culture and social custom. When commerce expanded and embryonic capitalism emerged, free competition rather than monopoly was encouraged and safeguarded by laws and
judgements. Chinese guilds enjoyed less significant monopoly power than their medieval European counterparts did. In traditional China, people normally attributed business success to commercial strategies and diligence rather than power and monopoly.

Under this background, Chinese trademarks mainly referred to individual artisans rather than the guilds to which the artisans belonged. Unlike pre-modern Europe where the exploitation of marks to the direct individual advantage or for the personal advertisement was strongly discouraged, individual advertisements thrived in China. Trademarks were used mostly as instruments to promote competition, guarantee goodwill and inform the public rather than to maintain a closed territorial restriction.

There existed no guild prior to 1671 in China's publishing industry, which boomed since 10th century. Free publishing and reprinting earlier books flourished throughout the major part of China's publishing history. China did employ a state monopoly on publishing shortly after the popularity of xylography; as a decree of 932 A.D. indicated, "if anyone wishes to transcribe the Classics, he must copy the printed editions offered by the government." However, books other than the Classics were largely at ease. Since the Xi-ning period (1068-77) of the Song dynasty, the imperial government eventually relinquished its exclusive right to generate canonical texts by rescinding its monopoly over the printing of the classics because it encountered various attacks and found it is impossible to run the business by itself. From that time forward, the Classics, which were the main sources of learning, could be printed and reprinted freely by anybody.

Pre-publishing censorship and absolute monopoly power, which very much enjoyed by the London Stationers' Company before the late 17th century, did not bloom in China especially after the government gave up its monopoly over printing. During the Mongol Yuan (1271-1368), where people were racially divided into four degrees with the Chinese (Han race) being squashed on the bottom, rigorous pre-publishing censorship was established to prevent potential Han-Chinese rebels. However, this situation ended with the perdition of the Yuan and in the following Ming dynasty books were normally published freely.

A careful review on a long list of the books printed from the Song (960-1279) to the Ming (1368-1644) collected in a pioneer book written by Lucille Chia suggests that no one could have claimed exclusive rights over the printing of earlier existed books including the Classics, dictionaries, histories, geographies, school primers, medical texts, encyclopaedias, poetry anthologies, plays and ballads. The rise of so many publishing centres across China was not a result of political control or guild monopoly but a result of "natural selection": resources such as woods, bamboo and transport convenience were crucial to produce cheaper papers, wooden blocks and inks, which eventually determine the quality and price of a book; the culturally and economically developed areas such as Jiangnan became leading publishing centres because of its incomparable intellectual and commercial advantages. Intense competition among publishers was frequent as price and quality always varied to attract different groups of customers.

The model of family craft secret inevitably has more monopolistic results. However, as mentioned above, most technologies relating to social welfare were promoted by government. Local officials played notably key roles in introducing new inventions into areas where they were not practiced, and in encouraging its expansion where they were already being adopted. In fact, whether they promoted the livelihood of the local people was essentially the criterion for Confucian official assessment throughout Chinese history.
Attempts of monopoly of course existed in China. Keeping technological secrets within family members often resulted in actual monopoly of a particular branch of handicraft. Powerful trademark owners may have used their trademark advantages in the market to knock over other competitors. Publishers often used personal and marital ties to purchase or inherit printing blocks. However, in reality these attempts did not cause significant side effects comparable to those of London Stationers; nor did they hamper social welfare. A consequence is that knowledge-based products benefited the society in a relatively swift way, making China the most educated and technologically and commercially advanced part of the pre-modern world. Good-quality and famous brand products were produced and transported to even beyond the empire; technologies were effectively employed to improve productivity and manufacturing exquisiteness; and education and knowledge spread very rapidly after the boom of publishing industry, fostering an atmosphere that promoted the creation of more new ideas in the Song and Ming (1368-1644) and the advent of "brain storm" or, quoting Thomas H. C. Lee, the "possible diversity of ideas".

3.2.3 Imbalance and the choice of China in late imperial period

Putting IP into a broader context indicates that IP practices in Chinese history were largely in balance with social welfare. Although China's IP practices were pre-modern, immature and rough, it may be suitable to pre-modern China’s productivity. Such IP practice was not given a chance to answer what would naturally happen if the balance between IPRs and social welfare breaks. For instance, it did not encounter the unprecedented technological revolution happening in our modern world, which increasingly pushing IP regimes to an imbalanced side. However, as some historical episodes of the late imperial China concerning foreign-China copyright disputes have suggested, the extent to which IP can be justified in an obvious imbalance context must be carefully examined from the point of social welfare.

Since the late 19th century, port treaties established between the Western power and Manchu dynasty started to cover IP protections for Western citizens in China. Quite contrary to Alford's argument which construes the late imperial China as a stagnant body that, being totally unaware of the function of IP, only learned at gunpoint, the employment of modern IP laws was not a mere implantation in an alien soil but considered seriously by Chinese leaders and scholars. The only problem was not cultural incompatibility but economic and educational imbalance. A letter that Zhang Bai-xi (1847-1907), himself a reputed scholar and the Chancellor of Peking University, sent to the Japanese envoy Uchida Yasuya in 1902 reveals the episodes as follows:

In China, few people understand the foreign knowledge and foreign languages. Every translated book is a result of heavy investment. For instance, a book that requires ten Yuan to be published in the UK will cost thousands of Yuan in China... Therefore, it is impossible to gain profits by translating and publishing foreign books... If every Western country is willing to help China's reformation and achieve the modernization together, [she shall be aware that] it will be harmful to make a [copyright] obstruction. If China can translate more foreign books, more and more people will be able to know foreign knowledge, which will benefit both China and the West when our commercial cooperation develops. Otherwise, books will be unable to be distributed and knowledge unable to be transmitted. Eventually nobody will be interested in foreign books and consequently we all lose our benefits.
This does not mean that the positive function of copyright per se was not realized. Theoretically copyright was justified and it was clearly understood that reasonable copyright protection would dramatically speed up China's development. Two noted reform leaders, Lü Hai-huan (1843-1927) and Sheng Xuan-huai (1844-1916), expressed their views in a telegraph to Zhang, which reads:

The purpose of prohibition of unauthorized printing [that the foreign countries requested] is identical to our [traditional term] "fanke bijiu (unauthorized printing must be definitely prosecuted)"… In all conscience, Authors always spend many painstaking efforts to translate and publish the books composed by them; that a book is unauthorizedly reprinted once it is published will block translating and composing more works.\textsuperscript{119}

Proposed solutions are not to entirely refuse copyright protection for the foreigners but to establish a reasonable level of protection. Various petitions appeared in the early 20\textsuperscript{th} century pressed the government to refuse to join the Berne Convention and other international and bilateral IP treaties,\textsuperscript{120} while repeated explanations were made to establish and implement a domestic written copyright law.\textsuperscript{121} Lü and Sheng suggested that books from the West and Japan except those purposely composed for China and meanwhile have already been privately translated and published should be translated freely.\textsuperscript{122} Japan proposed a special bilateral clause for China which provided that books and maps completed in Chinese language [by Japanese authors] must be protected but exceptions of free printing could be given to works composed in Japanese, translated by China or compiled in Japanese by others.\textsuperscript{123}

The solution might be imperfect though, it rather indicates a phenomenon that, although copyright per se is of moral and legal justification, it cannot be superficially supported without considering balance especially when a big conflict exists between social welfare and copyright. However, this does not mean a total abolishment of IP system, which seems to be an inevitable choice when society requires it. As revealed by those proposals, it is to reasonable protection levels the Chinese turned for answer: unlike those books that had been published elsewhere other than China and had already gained profit, non-protection for books exclusively written for China and published under notable investment would stifle the creativity of the authors and consequently harm the public education.

The severe conflict that the late imperial China encountered is unprecedented. On the one side, freedom of reprinting of foreign books is to some degree lifeblood to the less developed China. On the other side, publishing were unprecedentedly increasing in China, making a written copyright law a must.\textsuperscript{124} Such a phenomenon is not unparalleled but surprisingly similar to that of the mid-19\textsuperscript{th} century U.S., where British authors were not as lucky as they would have been in the late imperial China – for many years, they enjoyed entirely no legal protection in America at all.\textsuperscript{125}

IP laws continued to develop after Manchu dynasty vanished in 1912. As compared with China's then productivity and the extreme unstableness of war, the IP developments were considerable.\textsuperscript{126} It is not until 1949 when Chinese Communist abolished the previous civil law system did IP laws as a whole regime suspended in Mainland China.\textsuperscript{127} However, this does not mean that stress-marks were exclusively put on the ridiculous Communist "class struggle". As indicated in an administrative regulation of 1958, low remuneration to the authors was deemed to be a discouragement of creativity, while high payment is thought to be of danger to the public interests because readers will be subject to a heavy burden.\textsuperscript{128} After the disastrous Mao's Cultural Revolution (1966-76), IP laws were soon re-established under
China's socialist reformative framework. The problem is that China was about to find that the imbalance was probably worse.

4. Conclusion: New Discourse, New Path

IP validation in developing countries is not as simple as yes or no. A common problem in today's international IP world is that, as indicated by the U.S.-China IP negotiations taking place since the 1980s, the interests of the developing countries have not been sufficiently considered by the developed. Therefore, it is important to continue to carry on critical IP researches, helping the developing countries to establish better IP regimes which fit their domestic status quo.

Probably we can start our "new path" from "new discourse", enabling the developing countries to speak more by referring to their diverse histories and cultures concerning constructive elements for IP lawmakers. The international IP discourse, as Professor Ruth Okediji argues, shall not continue to be subordinated to the idiosyncrasies of the global IP owners.

China's IP history, which is not as negative as it is conventionally viewed, gives us a good example of constructive discourse: although IP protection is an inevitable choice of mankind evolution, protection level and even protection model are not self-evident and they can only survive under the doctrine of balance and social welfare. Therefore, justifying IPRs shall not immediately follow natural rights argument and, in turn, "instinctive" expansions of these rights. Nor shall the focus of international IP disputes be diverted from the explicit economic complications inhered in IP per se to illusive argument of cultural incompatibility. To a certain degree, piracy may be partly an ideologically motivated misnomer.

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9 We cannot ignore the problem that technology was overpriced and technology suppliers exploited developing country recipients. Susan K. Sell, Power and Ideas: North-South Politics of Intellectual Property and Antitrust, Albany: State University of New York Press. 1998, p. 81.


13 Executive Summary, at 4.


15 Various examples can be given in this regard. Scientists in developing countries, for instance, may be prevented from gaining access to protected data, or have insufficient resources to do so. Report 2002, at 16.

16 For instance, as Assafa Endeshaw argues, any movement to redress the built-in biases in the international IP system against the developing countries should aim at introducing exceptions to TRIPs in the interest of national development, health, education and culture. Endeshaw, “The Paradox of Intellectual Property Lawmaking in the New Millennium”, p. 49.


30 To echo Assafa Endeshaw who argues that the main reason for the U.S. strategy of vocal protestation at IP piracy seems to be the greater value that the U.S. wants to obtain in the Chinese market. Endeshaw, “A Critical Assessment of the U.S.-China Conflict on Intellectual Property”, p. 318.
31 The costs of developing new intellectual goods are largely lower than imaged. For instance, in the third of all U.S. patents that cite scientific papers in 1996, 75% were produced through public-funded research, and only 25% from industrial scientists; the underlying scientific knowledge itself has often been produced socially. Christopher May, A Global Political Economy of Intellectual Property Rights: The New Enclosures?, London: Routledge, 2002, p. 106. Even in the U.S., most intellectual properties, such as CDs and software, are rarely sold at face value even in the United States. Xiao-huang Yin, “Why Trade Disputes Will Continue to Flare”, L.A. Times, Apr. 2, 1995, at M2.
34 As Michael D. Pendleton and Zheng Chengsi argued, the U.S. unfairly requested China to achieve goals that the U.S. itself, if being put into the same context, would be unable to achieve. Pendleton and Zheng, “Ongoing China-United States Intellectual Property Negotiations”, p. 54.
35 Although China is also trapped into the web that she will be unable to attract more foreign capital if she refuses to improve its IP regimes in accordance with the U.S. will. Liu Gushu, “Patent Protection in China is the Prerequisite for Importation of Foreign Advanced Technology”, 3 China Patents & Trademarks (1985), p. 41. For China’s desire to attract foreign capital and to minimize any criticism from foreign investors, particularly the United States, and to enter the huge U.S. market, see Endeshaw, “A Critical Assessment of the U.S.-China Conflict on Intellectual Property”, p. 313, 320.
46 Shou Bu, “The Key”.
49 This phenomenon is notable. For instance, Shou Bu cited He Xing, a representative of Neo-Marxism, to support his argument. See He Xing, Pondering: The Economic View of Neo-Nationalism, Beijing: Shishi, 2001.
50 Shou Bu, “The Key”.
54 Sell, Private Power, Public Law, p. 2.
55 Drahos with Braithwaite, Information Feudalism.
58 Alford, To Steal a Book, pp. 9-29.
59 Ibid.
62 The conclusion that Glenn Butterton has reached is rather representative: [If] residues of Confucianism and xenophobia do linger in the contemporary Chinese sensibility, how do they dovetail with modern foreign efforts to bring Chinese intellectual property practices up to world standards?
64 Ibid., p. 131.
66 Miller, “The Posse is Coming to Town”, pp. 121-3.
69 Yu, “From Pirates to Partners”, p. 176.
72 Alford’s understanding on the European IP history is also simplistic: “[T]he seventeenth and eighteenth centuries witnessed the development of an approach toward intellectual property in Europe that had no counterpart in imperial Chinese history. Simply stated, they developed in England and on the Continent the notion that authors and inventors had a property interest in their creations that could be defended against the state. Society, growing numbers of Europeans came to believe, would benefit by providing incentives to engage in such work and disseminate the results.” Alford, To Steal a Book, p. 18.
81 Shao, “Alien to Copyright?”, pp. 400-31.
82 Ibid.
84 For an earlier research of Jiangnan’s embryonic capitalism, see Fu Yi-ling, “Ming Qing shidai Jiangnan shizhen jingji de fenxi (Analysis on the Economy of the Kiangnan Cities and Towns of the Ming and Qing)”, in Ming Qing ziben zhuyi mengya yanjiu lunwen ji (Collections of the Studies on the Embryonic Capitalism during the Ming and the Qing), edited by Institute of the Ming-Qing History Studies, Nanjing University, Shanghai: Shanghai renmin chubanshe, 1981, pp. 297-300; Du Li, “Yapian zhanzheng qian susong diqu mianfangye shengchan zhong shangpin jingji de fazhan (Evolution of the Commodity Economy in the Textile Industry of Suzhou and Sungkiang before the Opium War)”, in Collections of the Studies on the Embryonic Capitalism during the Ming and the Qing, p. 383. However, this does not mean that previous to this period there was no trademark protection, particularly by the court, existed at all, although a positive answer is awaiting to be supported by further archaeological findings.
89 Shao, “Chinese Genius”.
91 In terms of separated territories, Japan demonstrated a similar example to create patent-alike monopoly due to its feudal political nature. For instance, the Edo Bakafu central government granted

93 The German Empire had a patent system in the 16th-17th century but was destroyed by was so thoroughly that it was forgotten. Hansjörg Pohlmann, "The Inventor’s Right in Early German Law", 43 J. Pat. Off. Soc’y 121 (1961), pp. 134-5.


97 Edward C. Walterscheid, "Novelty in Historical Perspective (Part II)", JPTOS, Vol. 76, October 1993, p. 797. Patent of importation even continued to issue in Britain early in the 19th century. Ibid.


99 But some may still be promoted by family secret model.

100 Peng-Sheng Chion, The New Associations of Merchants and Artisans in Suzhou, 1700-1900 149-58 (National Taiwan U. Press 1990). The legal attitude of anti-monopoly and promoting free competition were clearly indicated variously in the legal judgements of the late imperial period. For some collections, see Collections of the Studies on the Embryonic Capitalism during the Ming and the Qing.


103 Shao, "Look at My Sign!", p. 677.


107 Zhang, China’s Printing History, p. 282. Also see Shao, “Alien to Copyright”, p. 409.


109 For a detailed analysis, see Chia, Printing for Profit, p. 141.

110 Chia analysed the role of education in promoting the printing industry. See Chia, Printing for Profit, p. 73. For the prevailing fashion of learning, education, book collecting and publishing in Kiangnan, see Jiang Qing-bai, Ming Qing Sunan wangzu wenhua yanjiu (Studies on the Kiangnan Culture of the Ming and Qing Dynasties), Nanjing: Nanjing shifan daxue chubanshe, 1999.

111 For instance, a low-quality commentary on the Classics published in Nanjing in 1615 was priced at only 0.5 tael. Kai-wing Chow, “Writing for Success: Printing, Examinations, and Intellectual Change in Late Ming China”, Late Imperial China, Vol.17, No.1, June 1996, p. 124. As a noted literati of the Ming, Hu Ying-lin (1551-1602), commented, "[R]ecently the book qualities of Huzhou and Xixian have promptly mounted up, which constitutes a keen competition in price with other publishing centres such as Suzhou and Changzhou.” Cited from Ye Wan-zhong, “Suzhou lishi shang de keshu he changshu (Publishing and Book Collecting in Suzhou’s History)”, in Guijiluncong (Studies on Ancient Books), Xie Guo-zhen and Zhang Shun-hui ed., Fuzhou: Fuzhou renmin chubanshe, 1982, p. 406.

112 Shao, “Chinese Genius”.


115 It is not the intention of this paper to discuss the issue of why China did not spontaneously enter modernization. For an interesting discussion, see Pomeranz, The Great Divergence.

116 Alford, To Steal a Book, pp. 30-55.
For ample documents referring to the copyright debates at the turn of the century, see Zhou Lin and Li Ming-shan, Zhongguo banquan shi yanjiu wenxian (Historical Materials for the Studies of China's Copyright History), Beijing: Zhongguo Fangzheng chubanshe, 1999, pp. 133-259.


119 Ibid., p. 43.

120 For further details of the petitions, see e.g., ibid., pp. 134-5; 151-3.

121 For China’s copyright law of 1910, see ibid., pp. 89-95.

122 Ibid., p. 43.

123 Ibid., p. 42.


128 Zhou and Li, Historical Materials, p. 308.


130 But such research does not necessarily aim at designing completely new IP laws to replace the existing ones. There are attempts to design alternatives of IP regime. For instance, Lessig proposes a Creative Commons to replace the copyright framework. See Lawrence Lessig, Free culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity, New York: Penguin Press, 2004. But new regime will be subject to the test of reality. Probably we will be unable to design a brand-new one before further technological breakthrough occurs to overcome the inherent nature of knowledge products.


132 Although there are limitation terms in IP laws, they are not enough. I am currently studying on this issue.