HOW SHOULD CHINA DEAL WITH THE PATENT- RELATED ISSUES IN TECHNICAL STANDARDIZATION

ZOU AYUAN

(Juris Master (Hons.), Renmin University of China)

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SUMMARY

Technical standardization in the field of information and computer technology becomes gradually prevalent in the high-tech era. Technical standard setting, which enables interoperability among diverse devices or equipments, has been proven to be efficient and effective in fostering technological development and benefiting end users. As a standard setting process usually invites a group of competitors in the relevant industry to discuss future cooperation and even profit distribution arrangements, private standardization conducted on a voluntary basis has always been a concern in the eyes of antitrust and competition laws. Meanwhile, it has occurred to standardization promoters that patented technologies, which are inevitably involved in technical standardization nowadays, have posed a great threat to the wide adoption and the procompetitiveness of the standards formulated.

The patent-related issues arise in private technical standardization, either conducted through formal standard setting organizations or by loose joint ventures, mainly in the following two aspects: first, the collusive interactions of patents included in a standard may preclude or restrict normal competition; second, the monopolistic exploitations of exclusive patent rights may prevent the wide adoption of the standard or may cause unreasonably high royalties to be charged to interested standard adopters. Both of these two types of patent-related issues will end up distorting market competition and ultimately depriving benefits from consumers.

To address the above-identified issues, private standard setting organizations may apply a set of intellectual property policies inside the organizations to

regulate the relationship and the exercises of patents involved in a standard. For instance, to require only patents that are essential to the standard to be included in the proposed technical specifications so that competition will not be foreclosed within or beyond the standard. In addition, to impose early disclosure and reasonable and nondiscriminatory licensing obligations to prevent the standard setting and implementing process from being held up by manipulative patent holders for the purpose of realizing supra-competitive profits far out of proportion of their contributions.

Such intellectual property policies in the private sector, although flexible and efficient in regulating the patent-related issues in standardization, need to rely on regulations in the public sector, e.g., official laws and legal principles, to realize their enforceability, especially when the policies themselves are in dispute. First of all, the rules and principles of contract law could be applied as the noncompliance with an intellectual property policy in private sector could be construed as a breach of contract. Even when there is no policy at all, the manipulative exploitations of exclusive patent rights may still be captured by the doctrine of patent misuse or compulsory licensing under patent law. Furthermore, as long as free and fair competition is affected by the exercises of patent rights in standardization, competition law could always be applied as a safety valve to protect and restore competition.

Since China lacks of relevant experience in private technical standardization, a large portion of this paper is referring to the international standardization practice, especially from the US, hoping to explore advisable measures for China to adopt and apply in her own standardization practice.

GLOSSARY

3C	A joint venture among Philips, Sony and Pioneer, which holds some of the core technologies of manufacturing DVDs and DVD players
6C	A joint venture among Hitachi, Panasonic, JVC, Mitsubishi, Toshiba and Time Warner, which holds some of the core technologies of manufacturing DVDs and DVD players
ADTB-T	Advanced Digital Television Broadcast-Terrestrial A Chinese Digital Terrestrial Television standard proposal designed by Shanghai Jiaotong University of China
ALJ	Administrative Law Judge An official in the United States who presides at an administrative trial-type hearing to resolve disputes between government agencies and someone affected by decisions of the agencies
ANSI	American National Standards Institute A standardization organization of the United States
De facto standard	A standard emerges spontaneously in the operation of market activities instead of being intentionally set up (Defined in David S. Bloch and Scott S. Megregian, United States: The Antitrust Risks Associated With Manipulating The Standard-Setting Process, Mondaq database, Anti-trust/Competition column, 2004)

DMB-T	Digital Multimedia Broadcasting-Terrestrial
	A Chinese Digital Terrestrial Television standard proposal designed by Tsinghua University of China
DOJ	Department of Justice
	A Cabinet department in the US government to enforce the law and defend the interests of the US according to the law and to ensure fair and impartial administration of justice for all Americans
DRAM	Dynamic Random Access Memory
	A type of random access memory that stores each bit of data in a separate capacitor within an integrated circuit
DTV	Digital Television
DTT	Digital Terrestrial Television
	An implementation of a digital technology which provides more channels and better quality of pictures to a conventional television antenna
DVD	Digital Versatile Disc
	An optical disc storage media format used for video and date storage
DVD-ROM	Digital Versatile Disc-Read Only Memory
	The data stored on the disc can only be read and not written
ECJ	European Court of Justice

	The highest court of member states of the European Union
EU/EC	European Union/European Community
	Used interchangeably in this paper as the political and economic union of 27 member states in Europe
FTC	Federal Trade Commission
	An independent agency of the US government, whose principal mission is the promotion of consumer protection and the elimination and prevention of what regulators perceive to be harmfully anti-competitive business practices
ICT	Information and Computer Technology
IEC	International Electrotechnical Commission
	A non-governmental international standardization organization setting international standards for electrical, electronic and related technologies
IEEE	Institute of Electrical and Electronics Engineers
	An international non-profit, professional organization for the advancement of technology related to electricity
IETF	Internet Engineering Task Force
	An international standardization organization developing mainly Internet standards

Interoperability or compatibility standard	A technical standard characterized of interoperability or compatibility that enables diverse systems and organizations to work together
IP	Intellectual Property
IPRs	Intellectual Property Rights
ISO	International Organization for Standardization An international standard-setting organization composed of representatives from various national standardization organizations
ITU	International Telecommunication Union An international standardization organization regulating and standardizing international radio and telecommunications
JEDEC	Joint Electron Devices Engineering Council A semiconductor engineering standardization body including some of the world's largest computer companies as its members
JMOL	Judgment as a Matter of Law A motion made by a party, during trial in the US, claiming the opposing party has insufficient evidence to reasonably support its case. It is similar to summary judgment, which is a motion made before trial
NDRC	National Development and Reform Commission One of the most important governmental agencies under the State Council of China. Its major function is

	to formulate and implement strategies of economic and social development in a national level
NPC	National People's Congress
	The highest state body and the only legislative house in China
NSS	National Standards Strategy (of the United States)
MPEG-2	A standard for the generic coding of moving pictures and associated audio information
OASIS	Organization for the Advancement of Structured Information Standards
	An international standardization organization
Patent holdup	As far as standardization is concerned, it means the possibility that patent holders wait for others to make non-recoverable investments in a standard before demanding large royalties for use of their patents. It could be realized either by precluding competitors from using their essential patents in the standard through threat of injunctions, or by demanding supra-competitive licensing royalties far out of proportion of the their true economic contributions
Patent pool	A patent pool is created by at least two companies agreeing to cross-license their patents within the pool and to issue license(s) for the pool as a whole to potential third-parties
Patent portfolio	A collection of patents owned by a single entity
PTO	Patent and Trademark Office

RAM	Random Access Memory
	A form of computer data storage taking the form of integrated circuits that allow stored data to be accessed in any order
Rambus	A company engaged in high-speed interface technologies. It develops and licenses memory technologies to companies that manufacture semiconductor memory devices
R&D	Research and Development
RAND	Reasonable and Nondiscriminatory (licensing)
RF	Royalty Free (licensing)
SAC	Standardization Administration of China
	A standardization organization authorized by the State Council of China to exercise administrative responsibilities of managing, organizing, coordinating and supervising standardization work in China
Standardization	Generally means the process or the result of formulating a standard
	In this paper, it represents the corresponding processes of standard-setting, standard-revising and standard-implementing, either individually or collectively
SARFT	State Administration of Radio, Film and Television
	An executive branch under the State Council of China. Its Standards Institute was designated to take charge of Chinese DTT standardization

SDRAM	Synchronous Dynamic Random Access Memory A form of computer data storage which increases the speed at which a central processing unit of a computer can read or write memory
SIPO	State Intellectual Property Office (of China) A governmental agency directly subordinated to the State Council of China which is in charge of comprehensive intellectual property affairs arising in or in relation to China
SSO(s)	Standard-Setting Organization(s)
TRIPs	The Agreement on Trade Related Aspects of Intellectual Property Rights An international agreement administered by the World Trade Organization that sets down minimum standards for many forms of intellectual property regulation as applied to nationals of other WTO Members
USPTO	Patent and Trademark Office of the United States
VESA	Video Electronics Standards Association A non-profit, private SSO, including as members both computer hardware and software manufacturers
VL-bus	VESA Local Bus A standard for a computer bus design
W3C	World Wide Web Consortium

	A major international standardization organization for the World Wide Web
WTO	World Trade Organization

Note: the sources of the above definitions or descriptions can be found on the relevant pages of this paper, mostly from WiKipedia.

Introduction

Standards permeate through every corner of modern-day life. In the form of common specifications or requirements for products or services to comply with, standards provide the whole society with efficiency, safety as well as convenience. Among the various categories of standards, interoperability standards play important roles in this high-tech era, especially in the field of information and computer technology ("ICT"). All countries in the world which are striving for international competitiveness, including China, are paying more and more attention to developing interoperability standardization in ICT section.

Interoperability standardization is pursued for its technical significance and the benefits it would bring to consumers. However, there have always been concerns that standardization may end up functioning as a platform to eliminate competition or facilitate monopoly, especially when certain technologies underlying a standard are proprietary, that is, when the technologies involved in the technical specifications of a standard are protected by Intellectual Property ("IP") law. Admittedly, patent laws effectively promote technical innovation and competition, by granting patent holders a certain period of exclusive rights to protect their innovative achievements and recoup their investments. In the context of interoperability standardization, however, the existence of exclusive patent rights poses a great threat to procompetitive standard-setting and the wide adoption of the proposed standards.

The major object of this paper is to identify the most typical patent-related issues arising from private interoperability standardization in ICT section and

to explore a few applicable ways to resolve them. Regardless of the specific forms those patent-related issues may take, they can all be characterized either as compromising the wide adoption of the proposed standards or restricting free and fair competition, or both. Many of today's prevalent interoperable standards are the results of collective co-operation between international participants. To some extent, that means basic principles and rules underlying interoperability standardization are universally applicable. This paper is trying to explore sophisticated rules accumulated from international practice and then to apply those rules in interoperability standardization, in which China would engage herself. It is not surprising at all that some standardization policies of the US also apply well to China's domestic standardization.

Chapter I begins by presenting a brief introduction of standards and standardization. The research target of this paper focuses on interoperability standardization, mostly conducted by Standard-Setting Organizations ("SSOs") in the field of ICT. The reasons for choosing this target will be elaborated in the following text. Simply speaking, it is because such standardization comprises the most typical patent-related issue which raise the greatest legal concerns. At the end of Chapter I, the challenges facing Chinese ICT standardization are discussed with reference to the famous Digital Versatile Disc ("DVD") patent case.

Chapter II mainly identifies the three major patent-related issues in interoperability standardization and respectively explores appropriate rules to deal with those issues. The applicable rules discussed in Chapter II are mainly regulations in private sectors in the form of SSO IP policies. The first part of Chapter II begins by analyzing the common features and the proper

interrelations of the patents included in a proposed interoperable standard. It is widely acknowledged in the antitrust field that collusion among competitors in the same industry would greatly harm market competition. Therefore, in order to avoid antitrust scrutiny, private standardization has to be very cautious in dealing with the relationship between participants who are also competitors in a certain industry. With respect to formulating a standard, that means the patented technologies included in the technical specifications of a standard need to be strictly restricted to 'essential' ones. The first part of Chapter II will discuss the characteristics of 'essential patents' and why 'essential patents' are crucial to procompetitive standardization. The controversial Chinese Digital Television ("DTV") Standardization will be discussed to illustrate the significance of 'essential patents'.

The second and third parts of Chapter II will discuss the unreasonable exploitations of the legally granted patent rights in standardization and more importantly the effective countermeasures the SSO IP policies could take. Generally speaking, ambitious patentees manipulate their patents on the platform of standardization in the following two ways: First, they conceal the patented attributes of the technologies they contribute to a standard and then attempt to exercise their patent rights after the standard has been officially agreed on and widely adopted; Second, they leverage on their legally granted patent rights to exclude other competitors from using the standard or charge unreasonably high royalties for adopting the standard covered by their patents. These are the 'patent holdup' problems in the context of standardization. For private-sector regulations to handle the 'holdup' problems, the SSO IP policies normally function as a precaution, which requires either patent disclosure at the early stage of standard-setting or obligatory patent licensing after the technical specification of the proposed

standard is formulated. The second and third parts of Chapter II will respectively discuss the appropriate requirements of the patent disclosure and patent licensing obligations that SSO IP policies may stipulate, by largely referring to the famous Rambus case in the US.

Chapter III discusses the public-sector regulations—that is, the official laws—on the patent-related issues in standardization. An SSO IP Policy as a sort of private-sector regulations requiring patent disclosure and licensing obligations, is effective only when they are binding on members of the SSO. Chapter III analyzes the legal enforceability of the SSO IP policies mainly in the context of Chinese law. When there is noncompliance with the obligations required by an SSO IP policy, which law should apply to enforce the policy? Is contract law appropriate to address this issue? Under what circumstances would contract law be incapable of dealing with the problem? What if there are disputes regarding the IP policy itself or if there is no clear policy at all, how should 'patent holdup' problems be curbed? Is patent misuse doctrine or compulsory licensing applicable to solve the problem? Moreover, if neither contract law nor patent law is applicable, is it possible for China to enforce the newly enacted antimonopoly law to prevent or regulate anticompetitive standardization, e.g., including 'non-essential patents' in a proposed standard? Chapter III will answer all these questions and also propose some solutions. It is highlighted that China does not have much private standardization experience and Chinese legislations applicable to standardization are either too outdated or incomprehensive. Therefore, the legal analysis in Chapter III tends to be normative. Other countries (especially the US) provide readily available experience and so they are discussed, hoping to provide guidance for Chinese standardization to be conducted within an appropriate legal framework.

Chapter I The Significance of Standards and Chinese Standardization

I.1 A Brief Introduction of Standards

A standard, nowadays generally acknowledged either as a level or degree of quality that is considered proper or acceptable or something fixed as a rule for measuring weight, value, etc[1], has existed since the beginning of recorded history. One of the earliest examples of standards is the ancient Egyptian calendar, which is a time measurement system of 365 days in a year, with three seasons, each made up of four months, with thirty days in each month.[2] The calendar was based upon the regular motions of the moon and corresponded with the cycles of the Nile. Back in 4241 BC, the ancient Egyptians began to use this calendar to remind themselves of the annual inundation of the Nile so as to decide the appropriate time to plant and harvest crops.[3] This primitive calendar took on important functions especially in respect of the vital survival concerns of the ancient Egyptians. Qin Shi Huang, who was known as the first emperor of China, not only was famous for politically unifying China but also was highly praised for his contributions standardizing the Chinese units of measurements such as lengths, volumes and weights.[4] As agriculture and commerce developed, varieties of plantation

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1 See Longman Dictionary of Contemporary English, the Commercial Press 1998, at 1498.

2 The beginning of a year was marked by five additional days, known as 'the yearly five days'. It was the time of great feasting and celebration for the ancient Egyptians. See http://www.kingtutshop.com/freeinfo/Ancient-Egyptian-Calendar.htm.

3 For detailed information on the ancient Egyptian calendar, see http://en.wikipedia.org/wiki/Egyptian_calendar.

4 Qin Shi Huang, personal name Ying Zheng, was the king of the Chinese State of Qin from 247 BC to 221 BC and then the first emperor of a unified China from 221 BC to 210 BC. He was known for the unprecedented accomplishment of ending the political chaos of several independent states and absorbing them into the State of Qin as a unified China. He also unified China economically by standardizing the Chinese units of measurements such as weights and measures, the currency, the length of the axles of carts (so every cart

methods and trading rules began to emerge and to some extent formed the basis of modern standardization.[5] These seemingly pristine standards, although not derived for the exact same reason of standardization today—for example, some architecture standards in ancient China were merely set to show crowning respect to the royal emperor[6]—nonetheless surely had provided necessary order and convenience thus promoting the development of ancient society.

With the advent of the Industrial Evolution in the early nineteenth century, the simple rule-like standards were far from meeting the ends of the burst of new industries. The absence of systematic standardization caused significant inefficiencies to industrial expansion and sometimes even endangered public safety. Take the railroad for example, this great invention was an economic, efficient and effective means of transporting raw materials and products to distant destinations, compared to other ways of transportation. However, the efficiency of railroad transportation would be greatly compromised if the widths of railway tracks in different regions varied from each other. Imagine the waste of energy if a train had to be unloaded halfway to the destination because the latter railroad track did not line up with the wheels of the current train, or the time delays due to the change of wheels at every connecting point. Realizing the obvious importance of the unification of the railroad gauge, no matter what purposes are sought for, economic or military, now

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could run smoothly in the ruts of the new roads), the legal system, and so on.
For information on Qin Shi Huang, see http://en.wikipedia.org/wiki/Qin_Shi_Huang.

[5] Standardization, which generally means the process or result of formulating a standard, hereinafter represents the corresponding processes of standard-setting, standard-revising and standard-implementing, either individually or collectively.

[6] See e.g. Chen Yu, Yao Yuqin, Research on the Change Process of Curved Roof of Chinese Ancient Architecture by System Dynamics, Nanjing Academy Journal, China, 2005, at: http://www.systemdynamics.org/conferences/2005/proceed/papers/CHEN205.pdf.

sixty percent of the world's railroads use a gauge of 4 feet 8.5 inches (1435mm), which is known as the standard international gauge.[7]

As time proceeds to the 21st century characterized as a globalization and information explosion era, standardization has sprung up like mushrooms catering to the increasing needs of the modern society. We are now actually living in a world built on standards. We can play DVDs bought from any video shop in our own DVD players because the DVD industry has adopted standardized encoding and decoding technologies enabling world-wide compatibility between different brands of discs and players. We can surf the Internet without difficulty to access information all around the world because we globally share a uniform Internet Protocol. We can trust the advice from doctors or lawyers with practice licenses because they have satisfied certain standards as qualified professionals. We can eat snacks and use cosmetics without worrying about getting poisoned because the wide range of safety standards preventing dangerous uncertified products from circulating in the market. The widespread adoptions of standards are so overwhelming that we can hardly imagine the chaos in our lives if standards did not exist. At present, standardization emerges in many fields far beyond simply in manufacturing industry. It ranges from products conformity to service requirements, from technical interoperability to consumer safety. Such diversity makes the meanings of standards vary among different industries. Nonetheless, the intrinsic attributes of a standard enable different standards in different contexts to share some common characteristics—uniform and instructional. One of the most influential standardization organizations, International Organization for Standardization ("ISO"), defines a standard as "a document, established by consensus and approved by a recognized body,

[7] For more information, see http://en.wikipedia.org/wiki/Railroad_gauge.

that provides for common and repeated use, rules, guidelines or characteristics for activities or their results aimed at the achievement of the optimum degree of order in a given context".[8] Although not entirely inclusive, this definition manages to cover most of the prevalent standards in existence. Simply speaking, a standard sets out common specifications or requirements for a product or service to comply with in order to realize its intended use.

I.2 The Classifications of Standards and Standard-Setting Organizations

Standards can be classified into several categories depending on their contexts. There are industrial, agricultural, medical, military standards, classified by the corresponding industries. There are local, national, regional and international standards, just as implied, classified by the areas in which the standards are adopted and implemented. Depending on whether the final standards are made public, standards can be open or proprietary. Among all these categories, standards can also be advisory or compulsory.

Generally in this paper, industrial standards involving technical specifications in the field of ICT are the main target of the research. More specifically, the chosen target is usually conducted to realize technical interoperability or compatibility, either of which is a property referring to the ability for diverse systems and organizations to work together.[9] As Institute of Electrical and Electronics Engineers ("IEEE") defines, "Interoperability is the ability of two or more systems or components to exchange information and to use the

[8] See ISO/IEC Guide 2: 2004 [2], definition 3.2.
[9] See http://en.wikipedia.org/wiki/Interoperable. In the following text, 'interoperability' and 'compatibility' will be used interchangeably in illustrating a certain kind of technical standards.

information that has been exchanged."[10] In many technology-related markets, there is a great need for standardization which provides a common framework or format to ensure interoperability among related products and to foster the development of ancillary or peripheral devices.[11] Although some safety standards may have technical components, their designated functions as safety valves should distinguish themselves from interoperability standards discussed in this paper.

Interoperable standards generally come into being in three basic ways. Firstly, they may emerge spontaneously in the operation of market activities. A certain technology equipped with unparalleled advantages compared to other competing technologies often tends to succeed in the battle of market competition. As more and more consumers are attracted to use the winning technology, which is owned by a single company, the technical specification of the technology will become so dominant that it will gradually be regarded as a standard in the certain industry. Such a standard is called a 'de facto standard', which arises either because consumers recognize the standard's superiority over competing systems or because the technology enjoys a 'first move' advantage.[12] The Microsoft operating systems are great examples. There are no special standardization organizations 'set' them as the official operating systems, but the market itself obviously chose the Microsoft operating systems as the prevailing standard. A de facto standard does not have a formal standard-setting process and might sometimes even result in a better technical solution. However, it is neither efficient nor practical to rely

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[10] See IEEE Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries. New York, NY: 1990. IEEE, Institute for Electrical and Electronics Engineers, is an international non-profit, professional organization for the advancement of technology related to electricity. For detailed information on IEEE, see http://en.wikipedia.org/wiki/Ieee.

[11] See David S. Bloch and Scott S. Megregian, United States: The Antitrust Risks Associated With Manipulating The Standard-Setting Process, Mondaq database, Anti-trust/Competition column, 2004, at: http://www.mondaq.com/article.asp?articleid=28999.

[12] Id.

totally on spontaneous market activities to develop a technical de facto standard. Simply because it generally takes years of market competition before a certain technology can be recognized as a de facto standard. Secondly, standards may be set and enforced by governments or government agencies with regulatory powers. For example, the Ministry of Information Industry of China enforced a compulsory universal mobile phone charger standard, which required all cell phones designed after 14 June 2007 to adopt universal charger interface, otherwise they would not be approved for sale in China. [13] Government-set standards, mostly compulsory ones, are often adopted to accommodate the needs of efficiency and effectiveness under necessary circumstances. They are beyond the scope of this paper due to their compulsory characteristic and their government-sponsored nature. Last but not least, standards may be formulated by a group of private entities through agreements and later adopted by any interested market participants on a voluntary basis. Such private standardization is often carried on by formal SSOs or by several pioneers in a certain industry.[14] No matter who conducts the standardization process, due to the voluntary and consensus characteristics, standards that are privately and collectively set are obviously different from spontaneous de facto standards and compulsory government-set standards. Since such private and voluntary standards are usually formulated based on coordination between competitors (whether through the platform of an SSO or not), they tend to raise the greatest legal concerns, especially in the aspect of competition law, as compared to the other two

[13] See news release of Xin Jing Bao, Beijing, China, 16 June 2007, at: http://tech.sina.com.cn/it/2007-06-15/07191564384.shtml.

[14] The SSOs or the groups of entities participating in standardization are also called 'standardization consortia'. A consortium is an association of two or more individuals, companies, organizations or governments (or any combination of these entities) with the objective of participating in a common activity or pooling their resources for achieving a common goal. See http://en.wikipedia.org/wiki/Consortium.

kinds of standards. That is why such standardization is chosen to be the research target of this paper.

As far as technical interoperability standards are concerned, a great part of them arises in the field of ICT, primarily but not exclusively including the Internet, telecommunications, computer hardware and software, semiconductors. It did not happen by accident. The aforementioned industries emerged and continued to develop at a striking speed in the high-tech era. The highly competitive market provides consumers with adequate choices and at the same time urges the compatibility of interfaces of products made by different technologies.[15] Moreover, since new technologies change very quickly, technical interoperability standardization prospers and will continue to evolve intensely in the field of ICT.

In the process of standardization, formal SSOs are playing significant roles in initiating, developing, interpreting, maintaining and revising standards. Generally speaking, any given SSO can be classified by its extent of influence on the local, national, regional and international standardization arena.[16] There are thirty-three international SSOs [17] which have established tens of thousands of international standards [18] covering almost every conceivable area. [19] Among all the international SSOs, ISO, the International Electrotechnical Commission ("IEC") and the International Telecommunication Union ("ITU")[20] have the highest international recognition; correspondingly the

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15 See supra texts accompanying notes 9-11.

16 See http://en.wikipedia.org/wiki/Standards_organization.

17 ISO and IEEE mentioned before are both international SSOs. For the full list of the 33 international SSOs, see http://en.wikipedia.org/wiki/Standards_organization.

18 An international standard means a standard that is adopted by an international standardizing/standards organization and made available to the public. See ISO/IEC Guide 2:2004 [2], definition 3.2.1.1.

19 See supra note 16.

20 ISO, IEC and ITU have all existed for more than 50 years. They were respectively

standards developed by them enjoy the most prevalent adoptions worldwide. There are also some regional SSOs set up to promote and coordinate necessary regional standardizations, such as European Telecommunications Standards Institute ("ETSI"), ASEAN[21] Consultative Committee for Standards and Quality ("ACCSQ"). Furthermore, each country has its national standards organization, which takes charge of developing national applicable standards as well as supervising its subsidiary or local standards bodies' standardization process. Examples are like Standardization Administration of China ("SAC"), Japan Industrial Standards Committee ("JISC") and American National Standards Institute ("ANSI").

These different levels of SSOs, established on different basis, composed of different members[22], operated under different policies, yielding standards used in different areas and industries, all provide appropriate platforms facilitating voluntary and consensus standardization. The more sophisticated the SSO had evolved, the more reliable its standards turned out to be, thus the higher recognition the standards would receive from a wider range of adopters. Sometimes a standard is formulated by several technology companies without a formal SSO. These companies contribute their technologies and collectively figure out the technical specifications of the proposed standard and then try to promote the final standard to a larger application scope beyond themselves. They conduct standardization without officially setting up or joining an SSO.[23] Standards set up through such kind of private standardization are not different from those set up by formal SSOs in

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established in 1947, 1906 and 1865.

[21] ASEAN, the abbreviation of the Association of Southeast Asian Nations, is a geo-political and economic organization of 10 countries located in Southeast Asia. For more information, see http://en.wikipedia.org/wiki/ASEAN.

[22] Some are merely composed of national standardization organizations, such as ISO. Some are composed of both organizations and individual technical experts, such as IEEE.

[23] Examples are like '3C' and '6C' which will be discussed later on page 25.

nature. Basic rules and principles are similarly applicable to all private standardization, whether conducted through SSOs or not.

I.3 Benefits and Disadvantages of Standardization

I.3.1 Benefits of Standardization

Technical interoperability standardization emerges catering to the necessary needs of this high-tech era, meanwhile, benefits not only the rapid development of technology but also consumers welfare and the whole economy. From the perspective of technology development, standardization greatly reduces research and development ("R&D") costs and facilitates the introduction of new technologies. During the process of proposing and selecting specific technologies to be included in a standard, those with superior performances tend to be chosen as the technical solutions in the final standard specification because standard setters are to the maximum extent informed of all available choices. Without the platform of standardization which gathers most of the relevant technologies in a certain industry, the best technical solution would never be reached in a more efficient and effective way. Furthermore, the wide adoption of a standard would bring more profits to a patent holder if his patent is included in the standard. Technology developers therefore are motivated to explore better technical solutions with their best efforts, which is a strong impetus for technology competition and innovation.

Actually, consumers are the ultimate beneficiary in the process of standardization, especially interoperability standardization. First, consumers can enjoy a product's better technical performance derived from the 'best'

technical solution of standardization. Second, consumers are provided with plenty of alternatives to choose from without worrying the compatibility among products of different brands, since the interfaces have been standardized to enable interoperability among different products. Especially in a network market, where the "value of a product to a particular consumer is a function of how many other consumers use the same (or a compatible) product" [24], standardization allowing product compatibility among all users certainly carries substantial consumer benefits. The paradigmatic example is the telephone network, in which the value of the product is entirely driven by the number of other people on the same network.[25] Besides compatibility among products adopting the same standard, standardization also guarantees availability and interchangeability with complementary or replaceable products. Standardization is an inevitable outcome of technology development. It serves as a positive stimulus for innovation and competition, which will ultimately enhance social welfare. In a report released by German Institute for Standardization in 2000, standards are claimed to have contributed more to economic growth than patents and licenses.[26] Thanks to standards permeable in every aspect of the society, our life is becoming more and more convenient, comfortable and compatible.

I.3.2 Disadvantages of Standardization

In spite of all the appealing advantages of standardization, it can still be challenged in the following aspects: First, absent of network effects,

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[24] See Mark A. Lemley, Intellectual Property Rights and Standard-Setting Organizations, 90 California Law Review, December 2002, at 1896.

[25] See Herbert Hovenkamp, Mark D. Janis, Mark A. Lemley, IP and antitrust: an analysis of antitrust principles applied to intellectual property law, Aspen Law & Business, 2002, at chapter 35-3.

[26] See The Economic Benefits of Standardization, a report of a research project conducted in 1997 by the German Institute for Standardization along with the German Federal Minister of Economic Affairs and Technology. The full report can be found at: http://www.din.de/sixcms_upload/media/2896/Economic%20benefits%20of%20standardization.pdf.

economists generally presume that consumers fare best when many companies compete to offer different sorts of products.[27] Standardization which uniforms competing technologies into one standard may be undesirable to some extent. It will unnecessarily restrict product diversity, especially in industries where standardization brings no significant benefit.

Second, the organizational form of SSOs and the whole process of setting a standard have always been sensitive topics in the context of antitrust law. From a traditional view of antitrust law, the very existence of standardization might well be thought cause for concern. Most SSOs, after all, are composed of entities in the same or related industry, which sit together to exchange information, discuss technical cooperation and in many cases collaborate in deciding what kind of products to make and even how to distribute profits in future. The father of economics, Adam Smith has a famous view that "people of the same trade seldom meet together, even for merriment or diversion, but the conversation ends in a conspiracy against the public or in some contrivance to raise prices."[28] The mere fact that competitors act collectively in standard-setting may be easily scrutinized under antitrust law. Moreover, antitrust law has historically been hostile to horizontal agreements in restraint of trade, which are per se illegal.[29] In both the US and the EU, there are precedents in which SSOs were condemned to be per se illegal as they restrained trade.[30] The Supreme Court of the US in one of its consideration of

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27 See supra note 25, at chapter 35-4.

28 See Adam Smith, An Inquiry Into the Nature and Causes of the Wealth of Nations, Oxford University Press, 1976, at 128.

29 The condemnation of per se illegal requires no further inquiry into the practice's actual effect on the market or the intentions of those individuals who engaged in the practice. Section 1 of the Sherman Act of US characterizes certain business practices as a per se violation. It states that "every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal."

30 For example, in Radiant Burners v. People's Gas Co., 364 U.S. 656, 659-660 (1961), the Court held an American Gas Association rule refusing to sell gas for use in non-approved burners as triggering the per se rule.

SSOs and antitrust set a discouraging precedent, which concluded that "because of its reputation and influence in the industry an SSO could have a significant effect on competition and can be rife with opportunities for anticompetitive activity." [31] Even where an SSO itself is legitimate, such an organization does provide a platform for competitors exchanging detailed plans for future products in highly innovative industries (where product design is a significant determinant of competition), therefore, making collusion among competitors easier than it otherwise would be. Besides, an SSO acting like a cartel makes it possible for competitors to monitor the price and output decisions of rivals who also are members of the same organization.[32]

Third, standardization may be manipulated in favor of some powerful entities pursuing market controls and unreasonable profits. If a small part of the SSO members collectively have a significant market share, a standard including their technologies which are essential could be easily manipulated or leveraged as a tool to gain market control. The wide adoption of a standard facilitates their attempts to control the relevant market, which is much more difficult if they act individually. Standardization provides existing dominant firms with more accessible market power for them to strategically use thereby disadvantaging other competitors or maintaining monopoly by raising costs and barriers to entry. The behaviors of deterring new entrants to offer alternative, sometimes superior technologies, would definitely depress the passion for technological participants to innovate.

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[31] See American Society of Mechanical Engineers v. Hydrolevel, 456 U.S. 556, 571 (1982).

[32] See C-O-Two Fire Equip. Corp. v. United States, 197 F.2d 489 (9th Cir.1952), "standardization of a product that is not naturally standardized facilitates the maintenance of price uniformity", 13 Antitrust Law 2136b (1999); See also supra note 25, at Chapter 35-8.

In short, standardization has served the society well by its efficiency, better performance and other evident benefits. However, once wrongly manipulated, standardization could also do harms to competition and social welfare. It is a two-edged decision which has to be reached after fully balancing its advantages and disadvantages.

I.4 The Relationship Between ICT Standards and Patents

A crucial factor for a standard to realize interoperability among different products is its widespread adoption. Due to this consideration, standardization in the primary stage only included prior arts and universal technologies which were exploited for free. Excluding proprietary technologies in a standard guarantees the free access of applying the standard, which encourages its wide adoption to the maximum extent.

With the rapid development of technology as well as the increasing awareness of protecting intellectual accomplishments, however, it is almost impossible for newly developed ICT standards to achieve their interoperable functions and at the same time avoid the interaction with proprietary technologies. Take the US as an example, there are over 1.3 million patents in force and a significant part of these patents are in the ICT sector. [33] The great amount of ICT patents is because of the nature of these technologies and the ways they interact. [34] Products in the ICT field often combine a number of components, sometimes tiny components. Each of these

[33] See Mark A. Lemley, Ten Things To Do About Patent Holdup of Standards (And One Not To), 48 Boston College Law Review, 2007, at 150-151.

[34] Id.

components is produced by a series of patentable technologies due to technical complication and precision. Take the computer industry for example, just Intel's core microprocessor includes over 5,000 patents, not to mention other interfaces and protocols. Consequently, as the platform integrating the most advanced technologies in a certain industry, ICT standardization today would inevitably involve patented technologies. Without patented technologies, there won't be interoperability standardization in this high-tech era.

Patent law is enacted to promote innovation and competition. As the US constitution says, "to promote the progress of science and the useful arts by securing for limited times to inventors the exclusive right to their respective discoveries." [35] A patent grants its owner a series of exclusive rights to prevent others from using it without the consent of the owner. A patent holder can recoup his investment and expect potential profits during the exploration of his patent. The legal monopoly awarded by patent law greatly encourages inventors and other technical researchers to compete to innovate, thus promoting the development of technology.

Once a standard includes patented technologies in its specification, its widespread adoption might be compromised by the exercises of patent rights. Because in order to apply the final standard without infringing others' patent rights, interested adopters have to seek consents from all patent holders whose patents are included in the standard. The patent holders in standardization therefore are put in an advantageous position, or what is worse, they are granted with the opportunity to exaggeratedly manipulate their exclusive rights to control the final standard covered by their patents.

[35] See Article 1 Section 8 of the US constitution.

Firstly, patent holders may leverage their legally granted rights to recoup illegal benefits. Being fully aware of the significance of their patents to a certain standard, patent holders may try to deny any licenses to use unless their special terms are satisfied. Considering the essentiality of some patents, standard-setters have to compromise in favor of certain patentees. This offers higher profits to some patent owners than they would normally attain and will end up imposing unreasonable burdens on licensees and other standard adopters.

Secondly, patent holders may manipulate their patent rights to gain market power and monopolize certain markets, which is prohibited by antitrust law. Although patent rights have no longer been presumed to necessarily confer market power upon their owners [36], they might do so under the circumstances of standardization. Once a patented technology is finally included in a standard, it would be applied as an inseparable part of the standard. That means the patent cannot be easily replaced as long as the standard is still in function. The more widely the standard is adopted, the stronger the market power of a patent included in the standard might be. The standard as a whole integrated specification shepherds the exercise of one single patent's market power, which would be weakened by other close substitutes when it is exercised alone.

Thirdly, in standardization, there are more than one patent which belongs to several patent owners. These patent owners sometimes are competitors, either horizontal or vertical. The platform of standardization thus provides a

[36] See supra note 25, at chapter 4-3. See also US DOJ and FTC, Antitrust Guidelines for the licensing of Intellectual property, 1995.

great opportunity for these competitors to form a cartel. They could collude to deny new entries or raise rivals' costs. Especially when licensing rights are concerned, these patentees could act collectively to exclude disfavored technologies and to avoid supposed competition among them.

A technical interoperable standard is characterized as its proposed wide application, its collection of many patented technologies with no alternative non-proprietary technologies and its unparalleled technical advantages. Such characteristics tend to grant patentees whose patents cover the standard with stronger exclusive rights, as compared to when patents are individually exercised. In other words, when a patent covers a technical standard, a patentee's refusal of license to use his patent actually denies the access of the whole standard, including the use of many other patents, which the patentee gets no chance to influence without the platform standardization. That is, the exclusive rights of a patent, when manipulated in the process of standardization, could incur much more serious consequences than manipulated alone.

Admittedly, if it is technically feasible, standardization should include as few as possible proprietary technologies to ensure its universal adoption and avoid unnecessary disputes. Since we cannot completely avoid the involvement of patented technologies in standardization, it is necessary to explore applicable ways to prevent the exercise of patent rights from being manipulated in the process of standardization. The essential point is to properly limit the exclusive rights exercised by patent holders. Although it may seem to be a restriction of legal rights granted by patent law, it is the necessary sacrifice each patent holder has to make the moment he decides

to participate in the process and at the same time enjoy the benefits of standardization.

I.5 The Current Standardization in China and the Challenges It Is Facing

I.5.1 Current Standardization Environment in China

There is a popular saying in the business world: "third-class enterprises sell labor; second-class enterprises sell products; first-class enterprises sell technologies; supra-first-class enterprises sell standards." [37] Whoever possessing the power of controlling a standard in a certain industry wins in the technological competition and correspondingly obtains considerable profits. Moreover, the compatibility requirements between different generations of technologies undoubtedly enable owners of a standard to compete preponderantly in the follow-up development of new technologies, which is a virtuous cycle. Nowadays, standardization is not merely a tool for enterprises to pursue economic profits and technological competitiveness. Its significance has been promoted to the altitude of a national strategy. Some developed and developing countries have formulated their ambitious standardization strategies in the 21st century, for the purpose of grasping the preemptive opportunities in the battle of technical competition.

China realized the immediacy of competitive standardization especially after becoming a member of World Trade Organization ("WTO") in 2001. Economic globalization promoted frequent trade between different countries.

[37] See Zhang Ping, Ma Yao, Standardization and Intellectual Property Strategy, Intellectual Property Press, 2002, at 1.

Abandonment of tariff barriers to trade as well as other WTO rules encouraging free trade attracted multinational enterprises pouring into China. Everyone tries to enjoy a piece of the cake in China's giant market. Under the current circumstances, technologies and standards are often leveraged as non-tariff barriers to trade. As a technology-importing country, China is in a disadvantaged position compared to other technologically developed countries. There have been series of discussions regarding how to increase technological competitiveness and further China's emerging economy. On 20 July 2004, a nongovernmental 'High-Tech Standards Strategy Symposium' was held in Beijing. Through the coordinated efforts of a diverse group of ICT experts, economists, company representatives and academic researchers, the first report as regards Chinese technical standardization strategy named as "New Globalization: A Report of China's High-Tech Standards" was published. The 75-page report analyzes the challenges faced by China's high-tech industry and points out China's lack of standardization awareness and related policies. It also emphasizes the significance of a national standardization strategy for developing countries like China. Although there are no binding effects of the suggestions proposed in the report, it surely provided valuable guidance for China's future official standardization strategy. In April 2006, 'National Standardization Development Guidelines' (hereinafter called "the Guidelines") mainly drafted by China National Institute of Standardization was approved by the State Council. One of the most important guiding principles is to actively participate in international standardization processes, meanwhile developing independently self-proprietary technical standards. A transformation from 'nationalize international standards' to 'internationalize national standards' was proposed, so as to improve China's international competitiveness and therefore increase the international market share of Chinese products. Specifically, the

Guidelines set up a goal to upgrade the overall technological level of China's standardization in certain key areas to the internationally advanced level in the following 10 to 15 years. [38] During this goal-pursuing process, the Report said that China not only needs to increase her competence in technical R&D but also needs to formulate reasonable and specific rules and policies guiding standardization, covering the spectrum from formulation to implementation. One of the foremost key issues is how to appropriately deal with proprietary patented technologies in technical interoperability standardization.

I.5.2 Challenges Chinese Standardization Is Facing

China has not much relevant experience in dealing with technology standardization and the patent-related issues discussed in this paper. Chinese legislations that might be applicable in standardization are either blank or too outdated. [39] In fact, China was not paying enough attention until she paid a very expensive lesson in the DVD industry.

China is the world's biggest DVD production and export base.[40] Due to the cheap workforce and massive assembly lines, Chinese DVD players are competitive in price and are popularly sold all over the world. In 2003, DVD players manufactured by Chinese enterprises accounted for 70 percent of the world's total production volume of about 100 million sets.[41] The dominant sales of Chinese DVD players soon attracted great attention from overseas

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38 See news release, Re Proposals of Amending the Standardization Law of China, 12 March 2009, at: http://www.caijing.com.cn/2009-03-12/110119695.html.

39 Chapter III will focus on discussing existing Chinese laws and proper new rules that may be introduced in future, to regulate standardization where patent-related issues often arise.

40 See news release of People's Daily Online: Patent fees drag down DVD player exports, at: http://english.peopledaily.com.cn/200408/03/eng20040803_151685.html.

41 Id.

enterprises of the relevant industry. Since tariff barriers to trade had been abolished, they had to resort to other non-tariff barriers—technical barriers—in order to change China's dominance in international DVD players market.

There are mainly two joint ventures holding the core technologies of manufacturing DVDs and DVD players. One is called '6C' consisted of Hitachi, Panasonic, JVC, Mitsubishi, Toshiba, Time Warner, the other is '3C' consisted of Philips, Sony, Pioneer. The companies in the two joint ventures are also DVDs and DVD player producers. Chinese manufacturers have to apply standards developed by 6C or 3C in order to produce DVD players, either sold in domestic market or overseas. It is worth mentioning that Chinese DVD industry was aware of the patents in DVD standards owned by foreign companies before they adopted the technologies to produce DVD players in large-scale. Few people had bothered to inquire exactly how much they should pay for using others' proprietary technologies. Interestingly, the foreign patent holders (6C and 3C) in the meantime were also aware that their patents had been used by Chinese producers without paying royalties. They chose not to take any actions against the infringements. Several years later, it was not until the Chinese DVD manufacturing industry had developed sophisticated enough and DVD players made in China began to gain a large international market share that 6C and 3C jumped in front of the stage starting to allege their patent rights. A smart strategy.

In 2002, 6C and 3C began to charge Chinese DVD player manufacturers patent fees (about US$27.45 per unit, which is nearly 20 to 30 percent of the production cost) for using core technologies in DVD players made in China

and exported to overseas markets.[42] It was a backlash for Chinese DVD industry. The number of DVD producers in China sharply decreased after patent royalties were charged. In the first five months, nearly 30 DVD player producers had gone bankrupt in Shenzhen's Baoan District where many DVD player producers are gathered, according to an interview with a spokesman from Shinco, China's largest DVD player producer. [43] The high patent royalties charged by foreign patent holders had made it profitless for Chinese producers if they continued to sell their DVD players at the attractive prices like old times.

From 2002 to 2006, there were a series of negotiations and lawsuits regarding DVD patent fees. Chinese DVD producers and academic research scholars started to seek for legal counterattacks trying to lower down the high royalties. Some argued that the patent fees charged by foreign patent holders were unreasonably high therefore should be reevaluated. [44] Some argued that the foreign patent holders bundled both core technologies for manufacturing DVD players and many irrelevant technologies in their DVD standards, the latter of which should not be charged for royalties. [45] Some further argued that it was anticompetitive for the foreign patent holders to pool their patents (including relevant and irrelevant technologies) and license them together, which had deprived the rights of Chinese licensees to choose only essential technologies to produce DVD players. [46]

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42 See supra note 40.

43 Id.

44 See news release of People's Daily Online, DVD Patent Problem to be Solved in One Year, 9 October 2001, at: http://english.peopledaily.com.cn/200110/09/eng20011009_81840.html. See also news release of China Daily Online, Chinese Firms File Lawsuit on DVD Patent, 20 January 2005, at: http://www.chinadaily.com.cn/english/doc/2005-01/20/content_410667.htm. See also the special column on www. sina.com.cn regarding the Chinese DVD patent dispute, at: http://tech.sina.com.cn/focus/6c_patent/index.shtml.

45 Id.

46 Id.

Whether the above arguments are right or wrong, or should be supported or not, will be discussed in the subsequent texts of this paper. If there is one good outcome the DVD patent fees incident had brought, that is, it aroused the awareness of China to start to pay attention to technology standardization in which patents are extensively involved. China still gets much homework to do in order to avoid things like the DVD patent fees to happen again in the future. Learning from readily available experience might be the first move to fill the blanks in Chinese standardization. The following chapters will consequently explore feasible experience accumulated through decades of international standardization practices, especially in the US, hoping to provide useful guidance for China.

Chapter II The Patent-related Issues in Interoperability Standardization and the Private-sector Regulations in the Form of SSO IP Policies – Lessons Mainly from the US and International SSOs

Interoperability ICT standardization studied in this paper will inevitably involve patented technologies. [47] For those patents being parts of a final standard, each one of them has its unique technological merit and contribution; meanwhile, all of them have to be combined and applied collectively in order to realize the ultimate function of a standard as a whole. The patent-related

[47] As previously discussed in this paper in Chapter I.4 on page 17.

issues discussed here, therefore, generally emerge in the whole process of standardization in two different respects: the individual exercise of one single patent and the interaction of more than two patents. In other words, the patent-related issues in standardization can be categorized either as a monopoly or a collusive exploitation of patent rights, both of which are anticompetitive.

The aim of Chapter II is to identify the major patent-related issues that may arise in standardization. Generally speaking, they can all be characterized either as compromising the wide adoption of the proposed standards or restricting free and fair competition, or both. Chapter II is more importantly dedicated to explore appropriate rules and regulations in private sectors, for the purpose of preventing or solving the identified patent-related issues. Since SSOs organize the procedures of standard-setting, they are in a convenient position to make requirements to relevant patent holders regarding the exercises of their exclusive patent rights. Such requirements often appear as SSOs' internal IP policies, aiming at ensuring the efficiency and effectiveness of standardization and avoiding unnecessary troubles brought by patents. For small-scaled standardization conducted without a formal SSO, some of the underlying principles derived from the requirements also apply, even when there are no IP policies. [48] It is highlighted that the cases and examples referred to in this Chapter are mostly from the US and the SSOs IP policies examined and analyzed are all existing policies of well-established international SSOs. The reason lies in the fact that the US and those selected international SSOs are relatively experienced in dealing with standardization and patent-related issues involved. China would find their experience useful too.

[48] See detailed discussions in the following sections of Chapter II.

II.1 The Horizontal Relationship of Patents Included in A Standard

II.1.1 The Concept of 'Essential Patents'

In the initial stage of standard-setting, there will be an important process formulating the technical framework of the targeted standard. A group of technical experts gather to discuss the technical proposals, sometimes for years, with regard to which technologies should be included in the final standard. Both formal SSOs and small-scale joint ventures have their special technical committees or experts in charge of examining the eligibility of the proposed technologies. In the sense that private cooperative standard-setting often involves horizontal competitors agreeing on certain specifications of the products they plan to market, core antitrust concerns could be aroused regarding the boundary between cooperation and collusion.[49] Restrictively choosing patents that are 'essential' to a standard is one good way to guarantee that standard-setting falls into procompetitive cooperation instead of anticompetitive collusion.

'Essential patents' in many existing SSOs IP policies are defined as "patents that would be necessarily infringed by using or implementing the normative portions of the standard".[50] As to 'necessarily infringed', it means it is not

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[49] See Joseph Farrell, John Hayes, Carl Shapiro and Theresa Sullivan, Standard Setting, Patents, and Hold-up, 74 Antitrust Law Journal, No. 3, 2007, at 603.

[50] This definition is included in many SSOs patent policies. For example, see W3C's patent policy, at: http://www.w3.org/Consortium/Patent-Policy-20040205/#def-essential. W3C, the World Wide Web Consortium, is the main international standards organization for the World Wide Web. It is arranged as a consortium where member organizations maintain full-time staff for the purpose of working together in the development of standards for the World Wide Web. For detailed information on W3C, see Wikipedia at: http://en.wikipedia.org/wiki/W3c#cite_note-List-0.

possible to avoid infringement because there is no non-infringing alternative[51], whether commercially plausible or technically realistic. This definition was concluded from years of international technology standardization practice. In particular, the business review letters issued by the US Department of Justice ("DOJ") [52] stating whether the standards requested for examinations were subject to antitrust scrutiny, provided valuable guidance for the definition of 'essential patents' in standardization.

In 1997, Trustees of Columbia University, Fujitsu Limited, General Instrument Corp., Lucent Technologies Inc., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corp., Philips Electronics N.V., Scientific-Atlanta, Inc., Sony Corp., Cable Television Laboratories, Inc., MPEG LA, L.L.C. and their affiliates (hereinafter called the "Requester") collectively requested a statement of the DOJ's antitrust enforcement intentions with respect to a proposed MPEG-2 compression technology standard. [53] In the MPEG-2

See also Patent Group, American National Standards Institute, Intellectual Property Rights Policies in Standards Development Organizations and the Impact on Trade Issues with the People's Republic of China, 10 June 2004, at: http://www.law-gun.com/Article_Show.asp?ArticleID=3450.

[51] See W3C's patent policy. There are similar interpretations in many private joint ventures' or individual enterprises' patent licenses, such as MPEG-2, DVD 6C, Sun Microsystems Inc.

[52] The United States Department of Justice ("DOJ") is a Cabinet department in the US government to enforce the law and defend the interests of the US according to the law and to ensure fair and impartial administration of justice for all Americans. It is administered by the US Attorney General. See 28 U.S.C. § 501 and 503.
The Antitrust Division of DOJ is responsible for enforcing the antitrust laws of the US. It shares jurisdiction over civil antitrust cases with the Federal Trade Commission ("FTC") and often works jointly with the FTC to provide regulatory guidance to businesses. For detailed information on the Antitrust Division of DOJ, see: http://en.wikipedia.org/wiki/United_States_Department_of_Justice_Antitrust_Division.
Companies or other organizations in the US may submit a proposed action and receive a statement (the business review letter) as to whether the DOJ currently intends to challenge the action under the US antitrust laws.

[53] MPEG-2 standard could be applied in many different products and services in which video information is stored and/or transmitted, including cable, satellite and broadcast television, digital video disks, and telecommunications. MPEG-2 video compression allows considerable savings in the amount of data, and thus storage and transmission space, required to reproduce video sequences, by eliminating redundant information both within a particular image, as where a background is of all the same color, and between images, as where particular figures remain unmoved from one moment to the next. See details at: http://en.wikipedia.org/wiki/MPEG-2.
See also http://www.chiariglione.org/mpeg/standards/mpeg-2/mpeg-2.htm.

Patent Portfolio License [54] submitted by the Requester, an essential patent was defined as "any patent claiming an apparatus and/or a method necessary for compliance with the MPEG-2 standard under the laws of the country which issued or published the patent."[55] According to the Requester, patents in the MPEG-2 standard were determined by an independent expert to be essential to comply with the standard; and there was no technical alternative to any of the patents within the standard. [56] DOJ thus concluded that "the limitation of technically essential patents, as opposed to merely advantageous ones, helped ensure that the proposed standard did not, by bundling in non-essential patents, foreclose the competitive implementation options." [57] DOJ finally recognized the procompetitive nature of the proposed MPEG-2 standard and was not inclined to initiate antitrust enforcement action against it.

In 1998, a similar business review letter issued in response to the request of Philips, Sony and Pioneer (the aforementioned "3C") on their proposed DVD patent pools[58] clarified 'essential patents' further. This time DOJ explored the should-be relationship of different patents included in a single standard more specifically. In 3C's proposal, 'essential' is defined as "necessary (as a

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54 A patent portfolio is a collection of patents owned by a single entity. A patent portfolio license is to license all the patents in the portfolio as a whole. See http://en.wikipedia.org/wiki/Patent_portfolio, for more information.

55 See the US Department of Justice's Business Review letters in response to Trustees of Columbia University, Fujitsu Limited, General Instrument Corp., Lucent Technologies Inc., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corp., Philips Electronics N.V., Scientific-Atlanta, Inc., Sony Corp., Cable Television Laboratories, Inc. and MPEG LA, L.L.C., 26 June 1997 at: http://www.usdoj.gov/atr/public/busreview/215742.htm.

56 Id.

57 See the US Department of Justice's Business Review letters of MPEG-2 standards (supra note 55).

58 A patent pool is created by at least two companies agreeing to cross-license their patents within the pool and to issue license for the pool as a whole to potential third-parties. A patent pool can save both the licensor and the licensee time and money as regards patent licensing, however, it may create a risk of facilitating collusion among pool members or of excluding non-members. For further information on patent pools, see http://en.wikipedia.org/wiki/Patent_pool. See also: William F. Dolan and Geoffrey D. Oliver, United States: Department Of Justice Issues First Patent-Pool Business Review Letter Since Issuing 2007 Antitrust & IP Report, 30 October 2008, at: http://www.mondaq.com/article.asp?articleid=68770.

practical matter) for compliance with the DVD (-Video or DVD-ROM) Standard Specifications".[59] DOJ interpreted this definition to encompass patents that are technically essential—i.e., inevitably infringed by compliance with the specifications—and those for which existing alternatives are economically unfeasible.[60] Moreover, DOJ particularly indicated in its analysis that standards should only integrate 'complementary' essential patents. In the MPEG-2 review letter, DOJ roughly mentioned that a standard that aggregates competitive technologies and set a single price for them would raise serious competitive concerns.[61] In the '3C' DVD review letter, DOJ further introduced another concept—'substitute patents'—as opposed to 'complementary patents'. If the patents are substitutes for each other, the final standard including both those patents may negatively act as a price-fixing mechanism. Since substitute patents holders are often competitors, the platform integrating their patents into one standard could help them avoid the fierce competition they are supposed to face. The implementation or license of a standard as a whole would also assist them to monitor their competitors' activities such as price decisions. These are strictly intolerable behaviors in view of antitrust laws. Therefore, DOJ pointed out in its analysis that the inclusion of 'substitute patents' would unreasonably foreclose the competing patents from being used and would ultimately raise the price of products and services utilizing the standard.[62] Correspondingly, DOJ defined 'essential patents' more strictly with the additional requirement that they have no substitutes; in other words, they have to be complementary to each other. Including only 'essential patents' as defined above in a standard would

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59 See the US Department of Justice's Business Review letters in response to Koninklijke Philips Electronics, N.V., Sony Corporation of Japan and Pioneer Electronic Corporation of Japan, 16 December 1998, at: http://www.usdoj.gov/atr/public/busreview/2121.htm.

60 Id.

61 See supra note 55.

62 See the US Department of Justice's Business Review letters of DVD Patent Pools (supra note 59).

ensure neither of the anticompetitive concerns aforementioned will arise; rivalry is foreclosed neither among patents within the standard nor between patents in the standard and patents outside it.[63] Besides, a combination of complementary patents that are jointly licensed can be an efficient and procompetitive method of disseminating those technologies to would-be users.[64] DOJ also expressed its concerns about the 3C's definition of 'essential' as 'necessary (as a practical matter)'. Unlike the MPEG-2 standard, which required actual technical essentiality for eligibility, 3C's definition was inherently more susceptible to subjective interpretation, which could lead to the inclusion of substitute patents and injure competition.[65] Although DOJ finally did not condemn 3C's proposed standard to be anticompetitive, it was obvious that a clearer and more objective definition of 'essential patents' was necessary to avoid antitrust scrutiny.

In 1999, DOJ issued another business review letter in response to the request of Hitachi, Matsushita, Mitsubishi, Time Warner, Toshiba and JVC regarding their DVD-ROM and DVD-Video formats standard.[66] The requester defined 'essential' in their standard as 'no realistic alternative', which could be further interpreted as 'no economically feasible alternative'. DOJ believed that this definition would preclude substitute patents from being included and the proposed standard would not be challenged by antitrust laws.[67]

Based on DOJ's analysis in those business review letters, an 'essential patent' in a standard should be defined as the patent that would be inevitably

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63 See the US Department of Justice's Business Review letters in response to Hitachi, Ltd., Matsushita Electric Industrial Co., Ltd., Mitsubishi Electric Corporation, Time Warner Inc., Toshiba Corporation, and Victor Company of Japan, Ltd., 10 June 1999, at: http://www.usdoj.gov/atr/public/busreview/2485.htm.

64 See supra note 55.

65 See supra note 59.

66 See supra note 63.

67 Id.

infringed implementing the standard and there is no substitute alternative of it. 'Substitute alternative' here could be interpreted either as 'technically feasible' or 'economically feasible'. I personally consider the latter is more advisable. Since a standard is set to a large extent for the considerable economic profits it will generate, it will greatly compromise the benefits of a standard if we waste unrealistic economic resources using substitute alternatives despite they are technically feasible.

II.1.2 The Legal Implications behind 'Essential Patents' – A Normative Analysis

The concept of 'essential patents', simply speaking, derives from the antitrust concern of the collusion of competitors. Antitrust laws have always been very sensitive to the agreements or activities between competitors. In 1890, the first antitrust law of America—the Sherman Act—provided that "every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce…is declared to be illegal." [68] Many competition laws of other jurisdictions modeled on the US laws also impose strict prohibitions on collusive or concerted behaviors between competitors. The EU competition law prohibits all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade and competition. [69] Japanese Antimonopoly Act prohibits business activities by which entrepreneurs by contract, agreement, or any other concerted activities substantially restraining competition.[70] The newly enacted Chinese Antimonopoly Law also prohibits monopolistic agreements and

[68] See U.S. Sherman Act, section 1, Trusts, etc., in restraint of trade illegal; penalty.
[69] See Article 81 of the EC Treaty.
[70] See Article 2, 3 of the Antimonopoly Act of Japan.

concerted behaviors among undertakings that may eliminate or restrict competition. [71] These prohibitions stipulated by laws of different jurisdictions are more or less the same in nature. They apply not only to formal cartels but also to any agreement between competitors to fix price, limit output, divide market or exclude competition, all of which are misconducts most enterprises intend to do by colluding with other competitors. It is stressed that the analysis here as regards the legal implications behind 'essential patents' in standardization applies to most countries regardless of their different legal systems. Simply because the principles of standardization and the relevant laws do not vary much among different jurisdictions in general. For countries like China having zero experience in conducting antitrust analysis on standardization and the 'essential patents' involved, they may find that the implications below (mostly US experience) are readily applicable to them too.

As far as standardization is concerned, it is obviously a result of concerted agreements among competitors. The ordinary process of standard-setting necessarily involves competitors meeting together to discuss their technical proposals and their future licensing or managing plan. Antitrust laws historically had been very hostile to this form of information exchange among competitors. [72] As the technical and economic significance of R&D cooperation as well as IP licensing is gradually acknowledged, standardization is now generally considered to be procompetitive. Unless the standard is set merely for anticompetitive aims, such as naked price fixing, antitrust authorities usually compare both the anticompetitive and procompetitive aspects of a standard if there is a potential antitrust concern. Standardization would only be prohibited when its anticompetitive effects

[71] See Article 3 and Article 13 of the Antimonopoly Law of China. For detailed discussions of Chinese Antimonopoly Law, see Chapter III.3.1 from page 116 onwards.

[72] See supra note 25, at Chapter 35-16.

overweigh the procompetitive ones, correspondingly restricting or impeding competition to a certain extent. Standardization, therefore, as long as appropriately conducted, will not trigger antitrust attention. And the appropriate way to conduct standardization is to restrict the patents involved only to essential ones. [73]

Compared to other obligations stipulated in respect of patent exploitations,[74] the requirement of 'essential patent' in standardization does not seem to take many spaces in some of the current international SSOs IP policies. Take W3C's patent policy for example, the concept of 'essential claim' which equals to the abovementioned 'essential patent' is actually introduced for the purpose of clarifying the target of the patent disclosure and licensing rules, which form the main part of the whole patent policy of the SSO. [75] IEEE, another influential SSO, also merely defines what is an 'essential patent claim' in one of its standards board bylaws and explicitly claims that it takes no responsibility identifying essential patents.[76] I believe there are mainly two reasons for such kind of arrangements, neither of which is because the requirement of 'essential patents' is less important than any other rules in an SSO IP policy.

First, the identification of an 'essential patent' needs more than the mere efforts of technology experts. Sometimes the questions of including which patent in a standard and what is the reason for doing so are more inclined to

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73 The reason has been previously discussed in Chapter II.1.1 regarding the business review letters of DOJ of the US.

74 Other obligations will be subsequently discussed in the rest sections of Chapter II.

75 'Essential Claims' are defined in W3C's patent policy as "all claims in any patent or patent application in any jurisdiction in the world that would necessarily be infringed by implementation of the Recommendation". See W3C Patent Policy, § 8.1, 5 February 2004, at: http://www.w3.org/Consortium/Patent-Policy-20040205/.

76 See IEEE-SA Standards Board Bylaws, § 6.2, at: http://standards.ieee.org/guides/bylaws/sect6-7.html#essential-patent-claim.

be legal judgments than technical choices, especially when a huge patent portfolio is involved in the technical specifications of a standard. Second, as the organizer in formulating the final technical frame of a standard, an SSO is in no position of evaluating whether the ultimate standard is a consequence of anticompetitive collusion or procompetitive cooperation. It is the job of legal authorities to examine whether the technical specifications of a standard include non-essential patents which may affect competition.

The definition of 'essential patents' in SSO IP policies, therefore, is a precautionary stipulation for an SSO to avoid antitrust scrutiny in the first place. The requirement of including only 'essential patents' in a standard precludes the per se condemnation of an SSO to be a platform of anticompetitive collusion. Besides, it will also guarantee that the final standard is procompetitive in the sense that it does not foreclose or eliminate competition. As for complicated identification of massive 'essential patents', an SSO may submit its standard-setting proposal to antitrust authorities asking their antitrust enforcement intentions and then decide how to re-choose the final essential patents according to the antitrust authorities' feedbacks, as the aforementioned business review request in the US. [77]

Unfortunately, not every country has a legal authority as sophisticated as the US DOJ, the Antitrust Division of which is capable of conducting thorough antitrust examinations. Standardization conducted without the supervision of antitrust laws, in particular, without the requirement of 'essential patents', may end up facilitating collusive behaviors between competitors. Below an example from China is discussed to illustrate anticompetitive standardization incurred by failure to require 'essential patents' when formulating a standard.

[77] See supra note 52 and the texts accompanying it.

II.1.3 China's DTV Standardization and Its 'Essential Patents' Analysis

On 18 August 2006, after years of rivalry and delays, China finally announced the nation's technical standard for Digital Terrestrial Television ("DTT"). It was a great encouragement for Chinese DTV industry. Globally, the first DTV broadcasting for commercial purpose appeared in France in 1996 and then it rapidly spread all over the world.[78] The economic opportunities and the revolutionary new performance of DTV appealed both TV broadcasting business and consumer electronics industries. Realizing the huge market potential of DTV, in the late 1990s, several technologically developed countries began to formulate uniform DTV transmission standards and then tried to promote their national standards to other countries. The number of global DTV users had reached 220 million in 2006, and the average penetration rate of DTV came to 20%, among which Europe, US and Japan took high shares.[79] Countries without the ability of developing their own standards have to adopt others' and pay considerable patent royalties. With the expanding development of DTV industry, regions or countries like EU, US and Japan will enjoy more economic benefits brought by their first move in technical standardization.

China has the largest number of television users in the world. As far as the developing trend is concerned, digital television will certainly replace analog

[78] See China Digital TV Market Operation Report, 2006-2007, Research in China, at: http://www.hdcmr.com/article/english/03/8629.html.
[79] Id.

television in the near future.[80] The transformation of hundreds of millions of consumers would boost the Chinese TV industry to a remarkable extent. Meanwhile, markets of electronic chips, set-top boxes, pre-paid DTV services and other business in the inseparable chain of TV industry will be stimulated altogether. It has been estimated that by 2010, the value of the whole DTV industry of China will reach around 1500 billion Yuan (over US$ 200 billion).[81] Since 2001, Chinese standardization administration began to collect DTT standard proposals nationally. After five years of discussion, comparison, demonstration and contention, China finally owned its independently developed DTT standard with self-proprietary intellectual property. As far as digital terrestrial transmission is concerned[82], China will possess absolute control of her national market once the mandatory standard is implemented. Foreign enterprises in DTV industry have to apply the standard and pay patent licensing fees to Chinese patentees if they try to explore Chinese DTV market. If the standard later could be successfully promoted to other countries, the benefits would be inestimable. It is a thrilling news for Chinese people since for decades, China has lagged behind in technical development and has always been in the position of a licensee asking permission to use others' technologies. While most of people are looking forward to the bright future of Chinese DTV industry, few of them have noticed that there are serious antitrust concerns in the DTT standard.

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80 See Michael Starks, Report of the Digital TV Project, UK Digital Television, at: http://www.digitaltelevision.gov.uk/pdf_documents/publications/digitaltv_project_report.pdf.

81 See the Introduction of China DTV Industry Analysis and Investment Consultation Report, 2007-2008, China Investment Consultation, at: http://www.ocn.com.cn/reports/2006124shuzids.htm.

82 There are a number of different ways to receive digital television. Besides digital terrestrial transmission, there are also digital cable and digital satellite transmission. TV signals can also be received via the open internet infrastructure, which is usually referred to as Internet TV. Among these methods, digital terrestrial transmission is the most important aspect of DTV industry. China adopted Europe's digital cable transmission standard, DVB-C, and digital satellite transmission standard, DVB-S, while developing its own DTT standard of DTV industry.

In the primary stage of Chinese DTT standardization, there were several sets of standard proposals submitted in response to Chinese government's plan to roll out its own DTT standard. The proposals were submitted to the Standards Institute of the State Administration of Radio, Film and Television ("SARFT"), which was designated to take charge of Chinese DTT standardization. These DTT proposals were respectively Digital Multimedia Broadcasting-Terrestrial ("DMB-T"), designed by Tsinghua University; Advanced Digital Television Broadcast-Terrestrial ("ADTB-T"), designed by Shanghai Jiaotong University; Terrestrial Interactive Multiservice Infrastructure ("TiMi"), designed by the Academy of Broadcasting Science affiliated to SARFT and another one developed by Sichuan University of Electronic Science and Technology.[83] After a series of evaluation by authorized technical experts, Tsinghua University's DMB-T and Shanghai Jiaotong University's ADTB-T were selected as the final proposals of Chinese DTT standard. In 2003, the National Development and Reform Commission ("NDRC") of China [84] authorized Chinese Academy of Engineering to conduct a thorough technical evaluation of the two universities' schemes. According to NDRC's public release on the result of the evaluation and comparison, both of the schemes had their unique technical characteristics and could basically satisfy the requirements of digital television terrestrial transmission. [85] The dilemma of

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[83] See news release: China Announced its DTT Standard after 5 Years of Delay, 31 August 2006, at: http://www.digitaltv.eetchina.com/ART_8800431934_2300001_75efe100200608.HTM.

[84] NDRC is one of the most important governmental agencies under the State Council of China. The major functions of NDRC in China is to "formulate and implement strategies of national economic and social development, annual plans, medium and long-term development plans; to coordinate economic and social development; to carry out research and analysis on domestic and international economic situation; to put forward targets and policies concerning the development of the national economy, the regulation of the overall price level and the optimization of major economic structures, and to make recommendations on the employment of various economic instruments and policies; to submit the plan for national economic and social development to the National People's Congress on behalf of the State Council of China." For more information on NDRC, see: http://en.ndrc.gov.cn/.

[85] See news release: Uncover the Inside Story of Chinese DTT Standard's Dilemma, 9 December 2004, at: http://news.chinabyte.com/347/1885847.shtml.

determining which scheme would finally succeed induced a fierce debate between the two universities, each of which tried to convince the DTV industry that its scheme was superior so that it should be chosen as the sole set of technologies of Chinese DTT standard. Here I have no intention to explore their proposals' technical functions and merits any further. To sum up, they both have incomparably technical advantages their opponents do not have. Although their technologies are based on different principles, they can both fulfill the DTT mission individually. Moreover, they both totally own self-proprietary IP rights ("IPRs") of their proposals.[86] Since both Tsinghua University and Shanghai Jiaotong University have spent considerable time and money developing their schemes, neither of them would give up their insistence easily. Besides, there are many other interest groups involved in this proposal-selecting process in addition to the two universities. Take the downstream DTV product manufacturers for example, some of them have noticed the market needs of Chinese DTV and started their business years before the implementation of the formal national standard. They either applied the mature DTV standard of Europe or started up in a small scale applying Tsinghua's or Jiaotong University's technology in trial. It is important for them which proposal is finally adopted since it will determine whether they can continue their businesses without wasting previous investment or they have to abandon what they have grasped and start all over again applying a different set of technologies. Even government agencies were involved in the battle. The aforementioned Academy of Broadcasting Science affiliated to SARFT was resentful that its proposal was not considered and wanted to add a part of its scheme into the final standard. They all knew the huge profits they would receive once their proposals were selected, even just a portion. The persuasion and evaluation went on for months, still none of the proposal

[86] Id.

providers had the technical and political muscle to enable their technologies to be solely selected.[87] In the end, under the supervision of Chinese Academy of Engineering, three different proposals were combined together to form the final standard, in which Tsinghua's technology took a large part, followed by Jiaotong University's and only a tiny fraction of Academy of Broadcasting Science's coding method. The combination was said to have adopted each technology's strength and will improve the performance of the standard. It seemed to be the best way for standard setters then to solve the contention among different technology providers and interest groups without totally hurting anyone. Actually, through technical analysis, the final standard as a result of compromise is less a combination than a coexistence of different schemes. The vice dean of the Academy of Broadcasting Science, Feng Zou once pointed out in an interview in 2006 that there will be great difficulties combining Tsinghua's multi-carrier modulation and Jiaotong University's single-carrier modulation methods into one system. Even there is technically feasible way to combine the two inherently incompatible technologies, the cost will be remarkably high. [88] According to Mr. Zou, the alleged technical advantages of the combined standard are difficult to be realized in practice, moreover, it will increase by over 30% the cost to downstream producers to follow the mandatory combined standard manufacturing products. This outcome is so not the initial dream of DTV standardization.

Chinese standardization administration encourages technical competition. That is why in the beginning of DTV standardization it called for competent entities all over the country to submit their technical proposals and planned to

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[87] Id.

[88] See news release of enet.com.cn, at: http://www.enet.com.cn/article/2007/0601/A20070601630540.shtml.
See also http://digi.it.sohu.com/20070601/n250336745.shtml.

choose from the competing technologies the best one. It successfully collected qualified choices, however, failed to decide the final version among the candidates. Whether it is due to the consideration of balancing complicated relationships among different interest groups, or because Chinese government tried not to reduce the innovation enthusiasm of self-proprietary IP developers by accepting their proposals, the combined standard could not be justified in the context of competition law.

As the aforementioned 'essential patents' concept implies [89], standards that include substitute patents could pose antitrust risks. Competition is foreclosed between technologies within and outside the standard. The substitute patents holders could easily use the standard to collude fixing price or rejecting new entries. Ultimately consumers would pay higher prices and competition would be harmed in the related industry. From the Chinese DTV standardization process described above, it is obvious that the combined technologies in the final standard are not all 'essential patents'. Although it is not precise to say that Tsinghua's technology and Jiaotong University's technology are substitutable for each other—they both have their respective strengths—the two technologies are surely not complementary.

China's DTV standard is a compulsory technological standard. It was formulated by several independent entities (e.g., universities, academies, institutions, technology companies) under the guidance of Chinese government affiliates in charge. There is no formal SSO conducting the standard-setting process. Not to mention a set of comprehensive IP policy guiding the standardization. The Chinese DTV standard actually belongs to

[89] See Chapter II.1.2 from page 33 onwards.

government-set standards[90], which is different from voluntary and consensus private standardization conducted by SSOs or formal standard-setting joint ventures. The reason why I discuss China's DTV standard, even though it is not the research target of this paper, is because the great referential values it brought to private standardization conducted by SSOs. As far as China's national standardization is concerned, if government-set standards even fail to comply with the requirement of 'essential patents' to ensure procompetitive standardization, how can private standardization in China be expected to have such kind of awareness? The idea of 'essential patents' in standardization is not unfamiliar with Chinese standardization participants. After all, China (as a country member) and many of her affiliates have actively participated in international standardizations in recent years. When it comes to national practice in China, however, there seems to lack the environment to actually implement the 'essential patents' requirement in standardization. There is no special agency or legal department in China like the US DOJ, of which the Antitrust Division is capable of conducting comprehensive antitrust examination, to ensure a healthy market competition. For China, even the antitrust legislation is quite new, not to mention its legal application in standardization. Luckily there are sophisticated rules and experience from other countries for China to learn from and apply, taking into consideration of China's local circumstances.

II.2 The Monopolistic Patent Exploitations in Standardization and the Proper SSO IP Policies

[90] See Chapter I.2 from page 10 for government-set standards.

Restricting proprietary technologies in a standard only to 'essential' ones is just a premise of procompetitive standardization. As long as patents are involved, extra measures should be taken to restrict the exercise of exclusive patent rights. During private standardization conducted on a voluntary and consensus basis, interested participants try to get their patents included in the final standard to the utmost extent, since they are all aware of the benefits brought by the wide adoption of the final standard to their patents. Once a patent covers a settled standard, the patent holder would soon change from a person who is eager to get his patent included in the standard to a powerful 'licensor' who can decide who else can use his patent and claim his exclusive rights against any standard adopters. The reason is very simple: before a standard is adopted, there is often vigorous competition among different technologies for incorporation into that standard; after standardization, however, the dynamic typically shifts, as industry members begin adhering to the standard and the standardized features start to dominate.[91] As a Chairman of Federal Trade Commission ("FTC")[92] of the US has put it, "After the standard is chosen, industry participants likely will start designing, testing, and producing goods that conform to the standard – that is, after all, the whole idea of engaging in standard setting. Early in the standardization process, industry members might easily be able to abandon one technology in favor of another. But once the level of resources committed to the standard rises and the costs of switching to a new technology mount, industry members may find themselves locked into using the chosen technology."[93]

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91 See Rambus Incorporated v. Federal Trade Commission, US Court of Appeals for the district of Columbia circuit, 22 April 2008.

92 FTC is an independent agency of the US government, whose principal mission is the promotion of consumer protection and the elimination and prevention of what regulators perceive to be harmfully anti-competitive business practices. It shares enforcement of antitrust laws with DOJ (see supra note 52) in the US. For more information on FTC, see: http://en.wikipedia.org/wiki/Federal_Trade_Commission.

93 See Deborah Platt Majoras, Chairman, FTC, Recognizing the Procompetitive Potential of Royalty Discussions in Standard Setting, Remarks at Conference on Standardization and

The patented technologies included in a standard therefore would enjoy certain market power or perhaps dominance over their rivals.

The exercise of exclusive patent rights could lead to the 'patent holdup' problem, which is the possibility that patent holders wait for companies to make non-recoverable investments in a standard before demanding large royalties for use of their patents.[94] As an economic term, 'holdup' arises when a gap between economic commitments and subsequent commercial negotiations enables one party to capture part of the fruits of another's investments. [95] In particular, 'holdup' arises when one party makes investments specific to a relationship before all the terms and conditions of the relationship are agreed.[96] As far as standardization is concerned, that means the patent holders are able to 'hold up' other potential standard adopters, either by precluding competitors from using their essential patents in the standard through threat of injunctions[97], or by demanding supra-competitive licensing royalties far out of proportion of the their true economic contribution. Patent holders are aware of the dramatic impetus a standard could grant to their patented technologies. It has become the business model of technological enterprises in the new millennium – to insert their proprietary technologies into a technical standard by all means. 'Holdup' always causes economic inefficiency; in addition, the unreasonable royalty changes will discourage the passion of potential standard adopters. Ultimately,

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the Law: Developing the Golden Mean for Global Trade, Stanford University, 23 September 2005. The full speech is downloadable at: http://www.ftc.gov/speeches/majoras/050923standord.pdf.

94 See Timothy S. Simcoe, Explaining the Increase in Intellectual Property Disclosure, 8 December 2005, at: http://www.rotman.utoronto.ca/timothy.simcoe/papers/SSO_IPR_Disclosures.pdf.

95 See supra note 49, at 603.

96 Id.

97 An injunction is one of the remedies available to a patent owner against an alleged infringer to prevent future infringement of his patent by the alleged infringer.

technological innovation will be impeded and the high royalties will be passed on to consumers in form of higher prices.[98]

Chapter II.2 mainly discusses the monopolistic patent exploitations in standardization, which may lead to 'patent holdup' problems. More importantly, the following parts of Chapter II focus on exploring the applicable mechanisms private-sector SSOs could take, in order to avoid or resolve the 'patent holdup' problems in standardization. It is highlighted that the 'patent holdup' could happen in any technical standardization, whether it is national or international. The existing rules of influential SSOs IP policies analyzed and the normative SSOs IP policies proposed in Chapter II apply similarly in different countries, including countries like China with no such private-sector policies in standardization.

II.2.1 Typical Cases and Examples from the US

A typical strategy for a patent holder to manipulate standardization is to conceal the fact that he owns a patent covered by the ongoing standard, and then allege his exclusive rights after the standard has been settled and widely adopted. The following cases happened in the US are the two representative ones, from which we may figure out under what circumstances standardization may be held up by exclusive patent rights and how SSO IP policies can prevent the same from happening.

[98] See supra note 93 on page 5.

The first one is known as In re Dell.[99] In 1991 and 1992, the Video Electronics Standards Association ("VESA")[100] developed a standard for a computer bus design, called the VESA Local Bus ("VL-bus"). The bus carries information and instructions between the computer's central processing unit and peripheral devices.[101] In August 1992, VESA conducted a vote to approve its VL-bus standard and required each member's authorized voting representative to sign a statement that the proposed standard did not infringe the member company's intellectual property rights.[102] On 6 August 1992, Dell, a leading US computer manufacturer as a member of VESA, gave final approval to the VL-bus design standard, which is certified in writing as "this proposal does not infringe on any trademarks, copyrights, or patents" that Dell possessed.[103] After VESA's VL-bus design standard became very successful, Dell informed some VESA members who were applying the new design standard that their "implementation of the VL-bus is a violation of Dell's exclusive rights."[104] The FTC of the US thus charged that Dell restricted competition in the personal computer industry and undermined the standard-setting process by threatening to exercise undisclosed patent rights against computer companies adopting the VL-bus standard.[105] This is the first time the US federal law enforcement authorities have taken action against a company for unilaterally seeking to impose costs on its rivals through abuse of the standard-setting process.[106]

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99 See In re Dell Computer Corp., 121 F.T.C 616 (1996).

100 VESA is a non-profit, private SSO, including as members both computer hardware and software manufacturers.

101 See supra note 99.

102 Id. at footnote 2.
The statement contained the following certification: "I certify that I am the VESA member listed at the top of this ballot, or am authorized by such member to submit this ballot. By casting this vote I also certify that, to the best of my knowledge, this proposal does not infringe on any trademarks, copyrights, or patents, with the exception of any listed on the comment page. I understand that my vote and any comments will become public".

103 Id.

104 See supra note 99 at 617-618.

105 See FTC's news release at: http://www.ftc.gov/opa/1995/11/dell.shtm.

106 According to William J. Baer, Director of the FTC's Bureau of Competition. See FTC's

To settle the charges, Dell accepted a consent agreement [107] with FTC not to enforce its patent against computer manufacturers incorporating the VL-bus design in their products.[108] In addition, Dell was prohibited from enforcing any of its patent rights that it intentionally failed to disclose upon request of any standard-setting organization during the standard-setting process. [109] This settlement makes it clear that patentees cannot commit to a standard, and then after it is widely adopted, assert exclusive patent rights trying to block use of the standard or drive up the price through royalty payments. [110] Although the way of reaching a consent agreement with administrative agency to settle the problem had been criticized, several major SSOs surely experienced a large and rather sudden increase in IP disclosure during the early 1990s, just around the period of the Dell case.[111]

Another much more complicated case is Rambus v. Infineon[112], which had considerably shed lights on the should-be patent policies in the process of standardization.

Rambus develops and licenses memory technologies to companies that manufacture semiconductor memory devices.[113] In April 1990, Rambus filed a

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news release at: http://www.ftc.gov/opa/1995/11/dell.shtm.

107 A consent agreement is for settlement purposes only and does not constitute an admission of a law violation. When the FTC issues a consent order on a final basis, it carries the force of law with respect to future actions. See FTC's news release, at: http://www.ftc.gov/opa/2008/01/ethernet.shtm.

108 See FTC's news release at: http://www.ftc.gov/opa/1995/11/dell.shtm.

109 Id.

110 Id.

111 According to a study examining the increase of formal intellectual property disclosures in nine SSOs between 1981 and 2004. These SSOs are ANSI, ATM Forum, Alliance for Telecommunications Industry Solutions ("ATIS"), European Telecommunications Standards Institute ("ETSI"), IEEE, Internet Engineering Task Force ("IETF"), ITU, Open Mobile Alliance and the Telecommunications Industry Association. See Timothy S. Simcoe, Explaining the Increase in Intellectual Property Disclosure, 8 December 2005, at: http://www.rotman.utoronto.ca/timothy.simcoe/papers/SSO_IPR_Disclosures.pdf.

112 See Rambus. Inc. v. Infineon Techs, AG. 318 F.3d 1081 (Fed. Cir. 2003)

113 See Matthew F. Weil, Misstatement in Prosecution? No Matter; Silence During Standard-

US patent application (hereinafter called the "898 application") with claims directed to a computer memory technology known as dynamic random access memory ("DRAM").[114] Many of these patents claim aspects of a memory technology known as Rambus DRAM ("RDRAM").[115] In February 1992, Rambus officially joined Joint Electron Devices Engineering Council ("JEDEC"), an SSO associated with the Electronic Industries Association ("EIA")[116] that develops standards for semiconductor technologies, including standards for random access memory ("RAM"). By 1993, the EIA/JEDEC patent policy required members to disclose patents and patent applications "related to" the standardization work of the committees.[117]

In September 1993, Rambus disclosed its first issued RDRAM patent (hereinafter called the "703 patent"), a divisional of the 898 application, to JEDEC during a committee meeting.[118] In early 1993, during Rambus's membership on committee JC-42.3[119], JEDEC adopted and published a standard for synchronous dynamic random access memory ("SDRAM")[120] before Rambus disclosed the 703 patent.[121] Rambus officially withdrew from JEDEC in June 1996. After leaving JEDEC, Rambus filed more divisional and continuation applications and one of four patents concerning SDRAM and Double Data Rate ("DDR")-SDRAM was issued in 1999.[122] In December 1996, JEDEC began to work on a standard for DDR-SDRAM and ultimately

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Setting? That's OK, Too!, at: http://www.mwe.com/index.cfm/fuseaction/publications.nldetail/object_id/64101023-25E2-460E-8082-35A72C04F3E4#pat1.

114 See supra note 112, at 1084.

115 Id.

116 See supra note 112 at footnote 1. Since 1991, both JEDEC and EIA have changed their names. JEDEC now is known as the JEDEC Solid State Technology Association. EIA is known as the Electronic Industries Alliance.

117 See supra note 112 at 1085.

118 Id.

119 Committee JC-42.3 drafts standards for RAM, id.

120 SDRAM increases the speed at which a central processing unit ("CPU") can read or write memory by synchronizing itself with the CPU's clock speed. Id.

121 Id.

122 See supra note 112 at 1086.

incorporated four technologies that had been discussed in general before Rambus' withdrawal in 1996.[123]

In late 2000, Rambus sued Infineon, a manufacturer of semiconductor memory devices (including SDRAM and DDR-SDRAM) and a member of JEDEC, for infringement of the patents-in-suit. Rambus alleged infringement of fifty-seven claims in the four SDRAM and DDR-SDRAM patents.[124] Infineon claimed that Rambus, not disclosing to JEDEC its patents and patent applications "related to" the SDRAM and DDR-SDRAM standards, committed fraud by seeking to patent the technology being standardized at JEDEC while participating as a member and not disclosing its patents to JEDEC so that it could later bring the infringement suits against implementers of the standard.[125]

After construing the claims, the district court granted judgment as a matter of law ("JMOL")[126] of non-infringement in favor of Infineon. Infineon's fraud counterclaims were tried to a jury, which ruled against Rambus.[127] Rambus moved for JMOL of no fraud on both the SDRAM and DDR-SDRAM verdicts. Alternatively, Rambus requested a new trial. The district court denied JMOL on the SDRAM fraud verdict while granted JMOL on the DDR-SDRAM fraud verdict, holding that substantial evidence did not support the jury's verdict

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123 Those technologies include: source-synchronous clocking, low-voltage swing signaling, dual clock edge, and on-chip phase locked loop/delay locked loop. See supra note 112 at 1086.

124 Id.

125 Id.

126 JMOL is a motion made by a party, during trial in the US, claiming the opposing party has insufficient evidence to reasonably support its case. JMOL is similar to summary judgment, which is a motion made before trial. See: http://en.wikipedia.org/wiki/Judgment_as_a_matter_of_law.

127 Id.

because Rambus left JEDEC before work officially began on the DDR-SDRAM standard.[128]

Both parties appealed to the US Court of Appeals for the Federal Circuit. On appeal, the Federal Circuit upheld the district court's grant of JMOL of no fraud on the DDR-SDRAM verdict because Rambus had no duty to disclose before the JEDEC began formal balloting on the DDR-SDRAM standard.[129] Furthermore, the Federal Circuit ruled that the district court erred in its interpretation of the Rambus patent claims, specifically in the construction of certain critical terms in the patents.[130] The majority also held that the district court erred in denying JMOL of no fraud on the SDRAM verdict because the policy only required Rambus to disclose patent applications that read on the final proposed standard, not those applications that disclosed the proposed standard.[131]

The result that Rambus did not commit fraud in JEDEC standardization, which was held by the Federal circuit, prompted the FTC to file an independent administrative complaint against Rambus.[132] A great part of the FTC's complaint is the same as the Rambus civil litigation cases regarding Rambus' potential abuse of the standard-setting process through deliberate concealment of patents. By its own admission the FTC's goal was more ambitious than simply punishing Rambus for fraud on behalf of its alleged victims. Instead, the FTC wanted to protect standard-setting processes

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128 See Rambus, Inc. v. Infineon Techs. AG, 164 F.Supp.2d at 767.

129 Id. at 1105.

130 See Nicos L. Tsilas, Toward Greater Clarity and Consistency in Patent Disclosure Policies in a Post-Rambus World , 17 Harvard Journal of Law &Technology 2004, at 485.

131 See supra note 112 at 1104, 1105.

132 FTC administrative law judges are independent, but work for the commission. Decisions by the administrative law judge may be appealed by either side to the full Commission and the Commission's decision can then be appealed at the federal court level. See generally Complaint, In re Rambus, Inc., 18 June 2002, (No. 9302), at: http://www.ftc.gov/os/adjpro/d9302/020618admincmp.pdf.

across the technology industry from bad faith participants. "The conduct at issue here has done substantial harm to important technology markets, and threatens to undermine participation in industry standard-setting activities more generally…If you are going to take part in a standards process, be mindful to abide by the ground rules and to participate in good faith."[133]

On 24 February 2004, Chief administrative law judge ("ALJ") Stephen J. McGuire issued his initial decision ruling in favor of Rambus and dismissing the complaint. The ALJ found that FTC had failed to sustain its burden of proof for the violations alleged in the complaint.[134] It is worth noting that the ALJ—unlike the Federal Circuit—found that Rambus did not have a duty to disclose under the JEDEC patent policy, which was limited to encouraging early voluntary disclosure of any known patents.[135]

On 1 March 2004, FTC counsel filed its motion for an appeal to the full Commission.[136] On 31 July 2006, FTC overturned the ALJ's decision and determined that Rambus unlawfully obtained monopoly power. The Commission's unanimous opinion stated that "We find that Rambus' course of conduct constituted deception under Section 5 of the FTC Act…".[137] The acts of deception were also held to have constituted exclusionary conduct under Section 2 of the Sherman Act and contributed significantly to Rambus'

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[133] See FTC Press Release, FTC Issues Complaint Against Rambus, Inc.: Deception of Standard-setting-organization Violated Federal Law, 19 June 2002, (quoting Joseph J. Simons, Director of the FTC Bureau of Competition), at http://www.ftc.gov/opa/2002/06/rambus.htm.

[134] See Press Release, FTC, Initial Decision Released in Rambus Case: Judge Dismiss Complaint Alleging Company Violated Antitrust Laws, 24 February 2004, at http://www.ftc.gov/opa/2004/02/ramusid.shtm.

[135] Id.

[136] See Complaint Counsel's Notice of Appeal, In the Matter of Rambus, Inc., 1 March 2004 (No. 9302), at http://www.ftc.gov/os/adjpro/d9302/040301noticeofappeal.pdf. The Judge's initial decision is subject to review by the full Commission, either on its own motion or at the request of either party.

[137] See Glen Shapiro, FTC Accuses Rambus Of Unlawful Monopoly, 4 August 2006, at: http://www.tax-news.com/archive/story/FTC_Accuses_Rambus_Of_Unlawful_Monopoly_xxxx24450.html.

acquisition of monopoly power in the four relevant markets.[138] On 5 February 2007, FTC issued a final opinion and order against Rambus, which bars Rambus from making misrepresentations or omissions to SSOs and imposes price control on Rambus patents used in certain computer memory standards.[139]

On 4 April 2007, Rambus filed a petition in front of the nation's second-highest court, the US Court of Appeals for the District of Columbia Circuit, asking the court to review FTC's final order on remedies and the 31 July 2006, orders and opinion reversing ALJ's initial decision.[140] On 22 April 2008, it was decided by the court that the respondent, FTC, failed to sustain its allegation of monopolization, on the grounds that the SSO IP policy is not clear about the patent disclosure obligations and there is no substantial evidence that Rambus engaged in deceptive conducts which assist them in achieving illegal monopolization.[141]

The Rambus case sparked heated discussion on how to deal with the patent issues in standardization. An undisputable answer is not easy to reach, as shown from the rounds of litigations and the different conclusions reached. The Rambus case also aroused considerable attention from both SSOs and patent holders. For SSOs, their primary job is to set standards with the best

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138 See Press Release, FTC, FTC Finds Rambus Unlawfully Obtained Monopoly Power: Deceptive Conduct Fostered "Hold-Up" of Computer Memory Industry, 2 August 2006, at: http://www.ftc.gov/opa/2006/08/rambus.shtm.

139 See Press Release, FTC Issues Final Opinion and Order in Rambus Matter: Remedy Seeks to Restore Ongoing Competition in Computer Memory Technologies Markets, 5 February 2007, at http://www.ftc.gov/opa/2007/02/070502rambus.htm. The order requires Rambus to license its SDRAM and DDR SDRAM technology and sets maximum allowable royalty rates it can collect for the licensing, bars Rambus from collecting or attempting to collect more than the maximum allowable royalty rates from companies that may already have incorporated its DRAM technology.

140 See FTC: Rambus appeals FTC decision to D.C. Circuit at: http://voluntarytrade.org/newsite/modules/news/article.php?storyid=141.

141 See Rambus Incorporated v. Federal Trade Commission, US Court of Appeals for the district of Columbia circuit, 22 April 2008.

performance in the certain industry efficiently and effectively. Besides a sound organizational mechanism, adequate technical experts and qualified staff, it is specifically necessary for well-established SSOs to create clear, consistent and enforceable patent policies to restrict the exclusive power of patents in the process of technical standardization. As for patent holders, they should be fully aware of every detail of the standardization they participate in, especially to what extent they have to give up their patent rights once they become the patent contributors to the standard. Moreover, they should be informed of the legal consequences if they fail to act in good faith in the standardization process.

The judgment of whether Rambus has engaged in deception or unlawful monopolization depends greatly on what does the SSO IP policy require in the standardization in question. The several rounds of litigations described above provided relatively comprehensive guidance on how to interpret the rules of an SSO IP policy and what obligations should the IP policy require in relation to the exercise of exclusive patent rights. The rest parts of Chapter II will discuss two of the most important obligations required or should be required by SSO IP policies regulating the patent-related issues.

II.2.2 Patent Disclosure Obligations in Standardization as Required by SSOs IP Policies

Due to the technical complexity of standards, it is difficult for standard adopters to figure out themselves exactly how many patents are involved in the standard. Even for formal SSOs consisted of qualified technical experts, the number of patents owned by different individuals could still be

overwhelming if they try to search them one by one. That is why it is necessary for patent holders participating the standardization to disclose their patents involved in the proposed standard, especially the essential ones. It would save considerable time for both SSOs and individuals to completely understand the proprietary extent of the standard they are going to develop or adopt. The following sections will discuss specifically what the patent disclosure obligations in an SSO IP policy require or should require, i.e., what has to be disclosed, when, how and to whom the disclosure has to be made.

II.2.2.1 Justifications of Patent Disclosure in SSOs IP Policies

The benefits brought by patent disclosure to private ICT standardization are obvious. SSOs could be more efficient in evaluating the proprietary extent of the standards they are developing without having to search all related patented technologies by themselves. All the members of SSOs and potential standard-adopters could be clearly informed of how many patents are exactly involved in the standardization they participate in so they can be prepared when patent holders exert their exclusive rights. This would greatly reduce the possibility of patent holdup, which is common in absence of disclosure requirements.

People in favor of strong IP rights might argue that a duty to disclose discourages patent holders to take part in standardization since it compromises their legally granted exclusive rights. From my point of view, the compromise is necessary. Patent holders involved in voluntary standardization must have participated in the standard-setting process based on their freewill. Those who are unwilling to reveal their patents to other

potential competitors may choose not to join in standardization at all. They have their free rights to decide whether they want to contribute their patents in a standard and enjoy the corresponding benefits, or they want to explore their patents individually. An SSO IP policy is in no position to impose a patent disclosure obligation on someone who is not interested in participating in standardization. However, once a patent holder has decided to participate in standardization, he should realize that one of the most important purposes of standardization is that the standard developed by joint efforts could be adopted as widely as possible. To realize such wide adoption, exclusive rights of certain people have to be restricted to the extent that no one could easily capture the standard and manipulate it. The patent disclosure obligation is to restrain those patent holders who participate actively in standardization from holding up[142] the wide adoption of the final standard by concealing their patent rights in the first place.

Actually, the economic loss of patent holders due to the duty to disclose in standardization, if any, is totally retrievable from the wide adoption of standards. Besides, patent holders could enjoy the benefits brought by standards including their patents and at the same time explore their patents individually. The incentives to innovate would not be affected since patent disclosure does not necessarily mean that patentees have to give up their exclusive rights. They still have patent licensing rights to recoup their innovative investments.

Now back to the discussion of SSO IP policies. If there is one thing learned from the Rambus case, that is the necessity of a set of clear IP policies in standardization. The US Court of Appeals for the Federal Circuit unabashedly

[142] See previous discussions regarding 'patent holdup' on pages 45 and 46.

criticized the SSO at issue, JEDEC, for a "staggering lack of defining details" in its patent policy and failure to define clearly "what, when, how, and to whom the members must disclose patent information." [143] From 1999 to 2002, more SSOs developed IP policies in their bylaws, reflecting the increased salience of the issue.[144] Until now, among the eighteen international SSOs developing standards in the field of ICT I examined, the majority of them (fifteen) have formal IP policies which can be easily found on their websites. [145] Almost all of their IP policies include patent disclosure requirements and licensing terms.[146] There is no and shouldn't be a one-size-fits-all IP policy for all SSOs because of the significant diversity among different SSOs aiming at divergent standardizations. However, there are certain essential requirements in relation to patent disclosure that all SSOs should consistently adopt. After all, all SSOs acting in good faith would like to have policies encouraging participation and facilitating the widespread adoption of their standards, at the same time preventing bad actors from leveraging the process of standardization.

II.2.2.2 The Scope of Patent Disclosure in Standardization

[143] See supra note 130, at 476.
[144] See supra note 24, at 1904.
[145] The collection of SSOs is not comprehensive, however, includes most of the influential international SSOs within the ICT industry. They are International Organization for Standardization ("ISO"), The International Telecommunication Union ("ITU"), International Electrotechnical Commission ("IEC"), Institute of Electrical and Electronics Engineers ("IEEE"), W3C, Internet Engineering Task Force ("IETF"), 3rd Generation Partnership Project, 3rd Generation Partnership Project 2, Accellera Organization, Association for Information and Image Management ("AIIM"), American Society for Testing and Materials, Cable Television Laboratories, European Computer Manufacturers Association, Media Grid Standards Organization, Organization for the Advancement of Structured Information Standards ("OASIS"), Open Grid Forum, Telemanagement Forum and Website Standards Association. Except Accellera, AIIM and WSA, all of the above SSOs have clear IP policies posted on their websites.
[146] The IP policy of Mediagrid was not found since membership is required to access the same. It was noted that Mediagrid has formed a special legal group to deal with the IP policy.

In the Rambus case, the Federal Circuit analyzed the scope of Rambus' duty to disclose by interpreting the language of the JEDEC patent policy, which stipulated that information "covered by" patents or pending patents are encouraged to be disclosed. The court interpreted this language to indicate that JEDEC defined the duty to disclose "based on the scope of claimed inventions that would cover any standard and cause those who use the standard to infringe."[147] Based largely on JEDEC members' testimony, the court found that disclosure was required for patents and patent applications related to the standardization work of a JEDEC committee. Whether a patent or a patent application is related to the standard depends on the actual patent claims of the patent or the application, rather than on the description of the patent or application.[148] Finally, the majority of the Federal Circuit concluded that a JEDEC member was required to disclose a patent or a patent application only when a claim "reasonably might be necessary to practice a standard." [149] In other words, the duty to disclose operates "when a reasonable competitor would not expect to practice the standard without a license under the undisclosed claims."[150] The conclusion of 'necessary claim' is to some extent comparable to the concept of 'essential patent'[151], both of which would be necessarily infringed implementing the standard without licenses from the owners. By contrast, the dissenting opinion held that evidence supported a broader duty to disclose than that applied by the majority. The dissent defined the duty to disclose stipulated by the patent policy as requiring disclosure not only of patents and pending applications containing 'necessary claims' but also all of the relevant patents and

147 See supra note 112 at 1098.
148 Id. at 1099.
149 Id. at 1100.
150 Id. at 1101.
151 See previous discussions on 'essential patents' on page 28.

applications.[152] The different interpretations of the same policy could be attributed to, on the one hand, the unclear policy itself and on the other hand, different understandings of different people on 'covered' or 'related'. Regardless of what the JEDEC policy stipulated then, I personally believe that the patent disclosure obligation should not be so broadly interpreted that requires all patents related to the standard, no matter necessary or not (as the dissenting opinion of the Federal Circuit). The aforementioned Dell case[153] was criticized by commentators for creating an impractical duty, due to the numerous and random participation in SSOs by company employees and companies' potentially large, diverse IP portfolios.[154] Such an extensive duty to disclose may discourage certain patent holders from getting involved in standardization. For example, some patent holders may want to keep a low profile as regards their patent portfolios, especially those newly developed patents or patent applications. Besides, an extensive duty to disclose would impose unnecessary costs while bring little benefit to standardization. Patent holders would have to spend more time and money to arduously search in their patent portfolios in order to fulfill their disclosure missions. The technical committees or working groups of SSOs would be inundated with more patent declarations, which require extra resources to examine them individually. It will inevitably stall the progress and compromise the efficiency of standardization. More importantly, many of the disclosed patents under such a broad disclosure obligation would be inapplicable in the end due to their irrelevance. It is a huge waste of research resources. Actually, the only disclosures that matter are the ones relating to necessary claims because typically only necessary claims are subject to licensing for purposes of

[152] See supra note 112, at 1111, 1115.
[153] See pages 47 and 48 of this paper.
[154] See David Alban, Rambus V. Infineon: Patent Disclosures in Standard-Setting Organizations, 19 Berkeley Technology Law Journal, 2004, at 327,328.

implementing the standard.[155] In conclusion, it is advisable for SSOs to restrict their patent disclosure requirements to 'necessary claims' which would be necessarily infringed to implement the standards.

II.2.2.3 Disclosure Obligations Regarding Pending Patent Applications

There is little doubt that the patent disclosure obligation covers issued patents. Whether the obligation should cover pending patent applications is subject to debate. Several SSOs, such as ISO, IEC, ITU, IETF explicitly require or encourage both issued patents and pending patent applications to be disclosed while some SSOs do not mention patent applications in their policies at all. The difference is understandable since disclosure of patent applications, particularly unpublished ones, is an especially complicated and sensitive issue.

One factor causing the complexity of disclosing patent applications in standardization is that the claims or specifications of a patent application may change throughout the patenting process. It is quite possible that the claims or technical specifications in the final issued patent greatly differ from the ones originally set out in the patent application. The fact that the claims in an application cannot be fixed until after grant of a patent makes it difficult to decide whether the application includes 'necessary claims' that may cover the standard and whether it should be disclosed or not. For example, a company may disclose its original patent application to an SSO since it believes that there are 'necessary claims' in its application. However, the claims in the

[155] See supra note 130, at 508.

patent application may be amended as required by relevant patent office during pre-grant examinations to narrow or expand their scope. [156] Therefore the final patent granted to the company may be totally different from the originally disclosed patent application and there may be no 'necessary claims' covering the standard at all. Situations like this will waste resources on examinations of unnecessary information for SSOs and standardization participants. The negative effect will be significant once we consider the aggregate possibility of changes and uncertainties caused by hundreds of participants with their thousands of patent applications. An even worse scenario would be that a patent applicant in bad faith may disclose his patent application and then change his patent claims or add new claims before grant of a patent, so that the new claims would cover the final standard. By doing so, the patent applicant may be able to capture the final standard without breaching the patent disclosure obligation. This is the last situation people would expect in standardization—the standard is hold by a single IP owner an entire industry hostage.

Another reason why disclosure obligation in relation to patent applications should be treated cautiously is the traditional concern about the confidentiality protection of patent applications especially in their early stage. Many countries' patent laws require publication of patent applications after a period of time (usually 18 months since the filing date) before patents are finally granted. Some patent systems only require publications of patents after they are granted. For example, until 2000, pending patent applications in the US were still maintained in confidence by the USPTO. The valid interest for patent applicants to maintain confidentiality is completely understandable.

[156] Patent offices in different jurisdictions examine a patent application submitted in front of them to determine whether the application meets the requirements for granting a patent, according to their respective patent laws within their jurisdictions.

Unlike traditional property, which could be exclusively controlled by possession, intellectual property is much more difficult to master due to its invisible characteristic. That is why intellectual property laws were enacted to set up a series of special mechanisms different from traditional property laws' to protect intellectual accomplishments. The exclusive rights entitled by patent laws could prevent others from free-riding on patentees' innovative accomplishments. Since knowledge or ideas could be obtained at a surprisingly fast speed, the last thing a patent applicant wants to do in his patent development is to disclose his innovative ideas to the public before his ideas are acknowledged and protected by law. If a patent is ultimately granted based completely on its published application, the applicant should be less worried since the rule of 'priority date'[157] in patent laws could preclude followers from imitating the published application. However, if the published application is denied to grant a patent because of unclear claims or other minor disqualifications, the unsuccessful application might inspire other competitors taking advantage of the applicant's innovative ideas to file their 'newly developed' patent applications. The fear of such possibilities also justifies the reluctance of patent applicants to disclose pending applications to SSOs and other competitors during standardization.

The variations among issued patents, published pending applications and unpublished patent applications definitely call for different disclosure obligations in standardization. The disclosure obligation for issued patents is relatively simple, which should require all issued patents with 'necessary claims' to the standard to be disclosed. The specific contents of disclosure

[157] The priority right in patent law allows the patent applicant to file a subsequent application in another country for the same invention, from the date of filing of the first application for the examination of certain requirements. When a priority is validly claimed, the date of filing of the first application, called the "priority date", is considered to be the "effective date of filing" for the examination of novelty and so on for the subsequent application claiming the priority of the first application.

are suggested by some scholars to include, at a minimum: the name of the patent rights holder; contact information; the patent number and the draft standard to which the disclosure relates.[158] When it comes to published pending applications, the minimum disclosure contents should not differ from that of issued patents'. Since the application has been published, the disclosure obligation will not compromise its confidentiality. Actually, more information might be required as regards disclosure of pending applications. As discussed previously, there are a lot of uncertainties during the process of a patent application. Therefore, it is necessary to update the status of the patent application disclosed in standardization. If a patent is granted in response to its application, the original patent applicant should submit another disclosure declaring the newly granted patent. If the patent application is abandoned or rejected to be granted as a patent, the patent applicant should explicitly inform the SSO to withdraw the earlier disclosure made based on the abandoned or rejected application. Only in this way can SSOs always be appropriately informed to make wise decisions.

The disclosure of unpublished patent applications is the most controversial. On the one hand, forcing patent applicants to disclose their unpublished applications is strongly contradicted with their interests to safeguard the confidentiality of their innovative developments, especially when none of the disclosed unpublished claims turns out to cover the settled standard. On the other hand, however, it is unwise to totally immune unpublished patent applications from disclosure disregarding the possibility of potential patent holdups. To address this dilemma, it is suggested that a comparably limited disclosure obligation be applied to at least require a statement from the patent applicant that his unpublished pending application(s) contain 'necessary

[158] See supra note 130, at 515.

claims' of the proposed standard. It might not be feasible to identify the exact claims, however, it is advisable to require identification of the portions of the proposed standard on which the asserted 'necessary claims' of the unpublished patent application read.[159] In this way, SSOs would be provided with useful information to determine which areas of the proposed standard need to be reconsidered to avoid infringements. Such a limited disclosure obligation will not harm the legally supported confidentiality of an unpublished patent application and at the same time appropriately inform the SSO the proprietary status of the proposed standard. Of course, disclosure of unpublished patent applications in standardization on a voluntary basis is encouraged to reduce potential risks.

II.2.2.4 When and Based on Whose Knowledge to Disclose

The timing of patent disclosure is critical to efficient standardization. In Rambus, an important clue determining whether there was a breach of duty to disclose was subject to specific timing. There were conflicting opinions in Federal Circuit's final decisions about when did the duty of disclosure arise. As the JEDEC policy itself did not state when a committee member's duty will arise, the majority relied on trial testimony from, among others, the committee's chairman, who testified that the duty arose at formal balloting of a proposed standard. [160] Finally, the majority concluded that the duty to disclose did not arise until the beginning of the formal standard-setting process.[161] The dissent, however, criticized the majority for narrowly reading the duty of disclosure. The dissent found that JEDEC's patent policy required

[159] See supra note 130, at 516.
[160] See supra note 112, at 1101.
[161] Id.

disclosure based on "work they are undertaking", which should be interpreted more broadly than simply referring to the final, completed standard.[162] I fully agree with the dissenting opinion on this point. An obligation only requiring late disclosure could offer opportunities for participants in standardization to strategically add claims in the last minute before final voting, for the purpose of covering the proposed standard. If the new claim is demonstrated to be 'essential' and the patent holder refuses any licensing agreement, there is a great chance that all the standard-setting efforts prior to the final voting are in vain. What's worse, such a disclosure obligation allows patentees to capture standards undermining the effectiveness of SSOs' IP policies as contractual safe harbor mechanisms.[163]

As a matter of fact, many SSOs have realized the significance of early disclosure obligation in the process of standardization. As the Guidelines for Implementation of the ANSI Patent Policy clearly state, "Experience has indicated that early disclosure of patents is likely to enhance the efficiency of the process used to finalize and approve standards. Early disclosure permits notice of the patent to the standards developer and ANSI in a timely manner, provides participants the greatest opportunity to evaluate the propriety of standardizing the patented technology, and allows patent holders and prospective licensees ample time to negotiate the terms and conditions of licenses outside the standard development process itself."[164] In Guidelines for Implementation of ITU-T Patent Policy, it is also acknowledged that early disclosure of asserted patent rights is desirable, since early disclosure will contribute to the efficiency of the process and tend to minimize any possible

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[162] Id. at 1110, 1111.
[163] See supra note 154, at 328.
[164] See ANSI, Guidelines for Implementation of the ANSI Patent Policy § III (A), at: http://public.ansi.org/ansionline/Documents/Standards%20Activities/American%20National%20Standards/Procedures,%20Guides,%20and%20Forms/PATPOL.DOC.

disagreements with respect to patent rights or their applicability to proposed standards.[165] For these reasons, patent disclosure in standardization should be an ongoing obligation that applies throughout the standards development process.[166]

Various existing patent policies differ on the precise timing of when the actual disclosure statement must be submitted to SSOs.[167] Some still require disclosure to be made just prior to the date upon which a final vote is taken to adopt the proposed standard.[168] More and more SSOs stipulate in their policies indicating that disclosure obligation starts from the outset of standard-setting and disclosure statements should be submitted as early as reasonably possible.[169] Although these SSOs may not use the same words in their policies, clearly they all try to implement early disclosure obligation to obtain adequate information promptly to evaluate alternative solutions and avoid unnecessary troubles. When deciding the exact timing of disclosure required by patent policies, it is necessary to first define what knowledge could trigger disclosure obligations.

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165 See Guidelines for Implementation of ITU-T Patent Policy, § 4.1, at: http://www.ipr-std.org/en_ITU/2007/27/0727231638G7AB9K6G934474280DD.html.

166 See supra note 130, at 513.

167 Id.

168 I.e., see Intellectual Property Rights Policy of the Open Geospatial Consortium, INC, § 3.2.2, 11 July 2007, at: http://portal.opengeospatial.org/files/?artifact_id=23145.

169 I.e., the common patent policy for ISO/IEC/ITU stipulates that patent "information should be disclosed as early as possible during the development…" See Guidelines for Implementation of the Common Patent Policy for ITU-T/ITU-R/ISO/IEC, Part I § 3, 1 March 2007, at: http://www.noooxml.org/local--files/patents/ISO-ITU-IEC-patentPolicy-Common_Guidelines_01_March_07.pdf
The W3C patent policy stipulates the timing of disclosure as "disclosure as soon as practically possible is required". See W3C Patent Policy, § 6.8, 5 February 2004, at: http://www.w3.org/Consortium/Patent-Policy-20040205/.
The IETF IP policy stipulates that IPR disclosure is required "as soon as reasonably possible". See Intellectual Property Rights in IETF Technology, § 6.2.1, 6.2.2, March 2005, at: http://www.ietf.org/rfc/rfc3979.txt.

In Rambus, the majority of the Federal Circuit found that the JEDEC policy, though vague, did not create a duty premised on subjective beliefs.[170] The duty to disclose at issue was based on an 'objective standard', i.e., whether in fact a patent claim "reasonably might be necessary to practice the standard." [171] Therefore, Rambus' JEDEC representatives' personal and subjective beliefs on whether the SDRAM standard likely infringed Rambus' patent claims were irrelevant to Rambus' duty to disclose.[172] The dissent criticized the majority's judgment since such a purely objective standard would make it difficult to see when the duty to disclose could ever be triggered.[173] In defense of its position, the majority pointed out that a purely subjective standard of patent disclosure "would exempt a member from disclosure if it truly, but unreasonably, believes its claims do not cover the standard."[174]

Actually, both purely objective and purely subjective standard seem a bit extreme to appropriately determine what should trigger the duty to disclose. A purely objective standard actually provides little guidance for SSOs to examine whether participants have fulfilled their disclosure obligations as per the IP policies stipulate. Especially when there are disputes after the standard has been adopted, a purely objective standard would make it difficult to prove intentional misconducts during the standard-setting process. A purely subjective standard, although more applicable than the purely objective one, would invite inevitable controversy due to its total reliance on uncatchable minds of different people. What's worse, if a representative was intentionally kept ignorant of the knowledge of necessary claims by his employer, the purely subjective standard would preclude non-disclosure liabilities on such

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170 See supra note 112, at 1104.
171 Id. at 1100.
172 Id.
173 Id. at 1117.
174 Id. at 1104.

an obvious misconduct since disclosure obligation was triggered by personal knowledge.

The optimal knowledge standard for disclosure obligation is more inclined to be a subjective standard, with extra stipulations and reasonable expectations. Under such rule, the disclosure obligation is mainly based on the personal and actual knowledge of the representatives who participate in the SSO working group that is developing the draft standard.[175] The disclosure obligation is triggered as soon as an individual representative becomes aware of patents or patent applications that he believes contain necessary claims covering the draft standard under consideration. In addition, members participating in SSOs should be strictly prohibited from intentionally isolating their representatives from their patent information, especially the necessary ones, to avoid the disclosure obligation. A good example of the optimal knowledge standard for the disclosure obligation is IETF's IP policy, which introduces a 'reasonable and personal knowledge' standard. The policy stipulates in its definition part that 'reasonably and personally known' means "something an individual knows personally or, because of the job the individual holds, would reasonably be expected to know."[176] It is indicated that an organization cannot purposely keep an individual in the dark about patents or patent applications just to avoid the disclosure requirement. Meanwhile, it is important to restrict 'reasonably and personally known' in a practical scope. As IETF's IP policy continues to define, the disclosure requirement "should not be interpreted as requiring the IETF Contributor or participant (or his or her represented organization, if any) to perform a patent

[175] See supra note 130, at 510.
[176] See Intellectual Property Rights in IETF Technology, § 1, March 2005, at: http://www.ietf.org/rfc/rfc3979.txt.

search to find applicable IPR."[177] That means no comprehensive search of patent portfolios is mandated to comply with the disclosure obligation. It is also reasonably to imply that no collective or aggregate knowledge of the participants regarding patent information will be imputed to their representatives.[178] As ANSI once pointed out:

> *"As a practical matter, many companies would find such an affirmative duty to identify all applicable patents virtually impossible to fulfill. Many US participants, at any given moment, have literally hundreds of employees participating in as many standards development activities and in excess of 10,000 patents in their intellectual property portfolios. Patent searches are expensive, time-consuming and not dispositive. They also require a potentially complex legal analysis in addition to a technical one. Often the implication of a specific patent in connection with a particular standard is not easy to determine or evaluate. This problem is exacerbated by the fact that the standard under development usually is evolving and its technical specifications are subject to change up until the final consensus ballot."* [179]

Therefore, by practically focusing on representatives' personal knowledge instead of the collective knowledge of the participants, costs and burdens derived from disclosure obligations are greatly minimized while early disclosure is promoted. At the same time, interested entities would not be

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[177] Id.

[178] See supra note 130, at 511.

[179] See ANSI Activities Related to IPR and Standards, § II 1.4, August 2005, at: http://portal.etsi.org/docbox/Partners/Gsc/GSC10_archive/GSC10_IPR/gsc10_ipr_13%20ANSI%20Activities%20Related%20to%20IPR%20and%20Standards.doc.

discouraged from participating in standard-setting process by strict disclosure obligations, which may be beyond their capabilities to fulfill.

II.2.2.5 Disclosure Obligations Concerning Withdrawals

Another aspect a disclosure obligation should address appropriately is in relation to members' withdrawals from an SSO. In Rambus, whether there was a breach of duty greatly depends on whether a disclosure obligation should apply when a member withdraws from an SSO. The SSO, JEDEC, officially began to develop DDR-SDRAM standard in December 1996 and adopted it in 2000. The final standard incorporated four technologies that were covered by Rambus' patents or patent applications. Rambus alleged patent infringement based on the fact that Rambus had withdrew from JEDEC in June 1996 before formal standard-setting started, therefore, cutting both disclosure and licensing obligations. Infineon argued that because some technologies that ultimately made their way into the DDR-SDRAM standard were discussed before Rambus' withdrawal, Rambus had a duty to disclose patents and applications 'related to' the DDR-SDRAM standard.[180] The majority of the Federal Circuit held that there was no breach of duty in favor of Rambus because they interpreted JEDEC policy as indicating that disclosure duty did not arise before legitimate proposals were directed to and formal consideration began on the DDR-SDRAM standard.[181] Consequently, it is consistent for the Federal Circuit to conclude that Rambus did not breach the disclosure obligation since it had withdrew from JEDEC before formal standard-setting of DDR-SDRAM started. As discussed previously[182], it is

[180] See supra note 112, at 1105.
[181] Id.
[182] See pages 64 and 65 of this paper.

unwise for the Federal Circuit to interpret JEDEC patent policy as supporting late disclosure obligation, which would not only compromise the efficiency of standardization but also increase the possibility of patent holdups. Therefore, the Federal Circuit's conclusion based on the inappropriate policy interpretation that a withdrawal before final ballot should cut off disclosure and licensing obligations needs to be reconsidered. Meanwhile, such disputes call for SSOs to set up clearer policies dealing with withdrawal-related issues.

It seems understandable for participants to expect that a withdrawal from an SSO would preclude any subsequent obligations. Since an SSO policy is designed specifically for its members, there shouldn't be binding effects outside the organization. In practice, most SSOs' patent policies allow members to withdraw from particular technical committees or from SSOs as a whole.[183] Due to the 'building-block' nature of standardization, however, free withdrawal from SSOs does not necessarily mean total avoidance of disclosure obligations. In fact, stricter disclosure obligations should be required in relation to withdrawals.

Instead of requiring a member to promptly disclose the 'necessary claims' reasonably known to its representative, an SSO IP policy should require members who is about to withdraw to disclose all the patents or applications that are 'related to' the standard under consideration. Here 'related to' should be broadly interpreted to include not only the claims that reasonably might be necessary to implement the standard but also any claims that are relevant, or discussed, even rejected in the process of standardization, as the dissent of

[183] For example, the OASIS patent policy rules that: "A TC Party may withdraw from a TC at any time by notifying the OASIS TC Administrator in writing of such decision to withdraw. Withdrawal shall be deemed effective when such written notice is sent." See OASIS Intellectual Property Rights Policy, § 11, 20 January 2005, at: http://www.oasis-open.org/who/intellectualproperty.pdf.

the Federal Circuit used to interpret the broad scope of disclosure.[184] Moreover, the knowledge standard triggering the disclosure obligation should not be restricted to 'personally known'; instead, it should go beyond the personal knowledge of the member's representative when the member is withdrawing. To sum up, a member of an SSO is required to disclose all the relevant claims of the proposed standard, especially those that he does not wish to license, prior to his withdrawal. Such a strict disclosure obligation which discourages patent holdups could prevent evil members from capturing a standard by intentionally withdrawing from the SSO to avoid licensing obligations.

II.2.3 Patent Licensing Obligations in Standardization as Required by SSOs IP Policies

II.2.3.1 The Relationship Between Patent Disclosure and Patent Licensing obligations in SSOs IP Policies

Patent disclosure provides SSOs with information on what proprietary rights are involved and what are the consequences of adopting the standard. Such information, however, is notably incomplete.[185] A disclosure obligation alone would not help the SSO members or other standard adopters to avoid the exclusive exploitation of patents. Since there is hardly cost to disclosure, patent holders might even be encouraged to over-disclose. Without having to indicate how much they would charge for license fees or even if they would

[184] See page 58 of this paper.
[185] See supra note 24, at 1961, 1962.

grant licenses at all, patent holders probably would disclose hundreds of patents they own regardless of patent essentialities, which will be burdensome for SSOs in the preliminary process of formulating the technical framework of standards. Even patents or patent applications are completely disclosed as required, the lack of licensing commitments still would not prevent ambitious patentees from capturing the standard by refusing any unauthorized use or by charging unreasonably high price of the patents they hold. What is worse, the standard adopters would more easily be proved as willful infringers if they apply the standard without first attaining licenses since they have been on notice that there are patent rights covering the standard. Not only will these 'willful infringers' face the threat of injunction relief [186] of the patents they are using to implement the standard, but also they may be alleged to pay punitive damages to the patentees. Therefore, a clear set of appropriate licensing rules is truly necessary for SSOs to avoid patent holdups and guarantee procompetitive standardization. As a matter of fact, almost all SSOs with certain extent of scale today have more or less licensing requirements expressed in their patent policies.

Since licensing obligations are the effective way to practically prevent patent holdups, does this mean disclosure obligations are less required? The answer is no. As far as private standardization is concerned, a standard should avoid the involvement of proprietary technologies to the greatest extent as long as it is economically and technically feasible. After all, the tension between exclusive control of patents and free access of standards has always existed. Although licensing terms could serve as a balanced tool fixing the tension, it is better to avoid it in the first place. Merely imposing mandatory licensing obligations will not inform SSOs the proprietary extent of the standards they

[186] See supra note 97.

are developing. The disclosure obligations could help SSOs avoid the unnecessarily excessive inclusion of patents in standardization, since SSOs clearly aware of what proprietary technologies are involved in their proposed standards could then try to develop workarounds of the less essential patents and eventually replace the nonessential patents with other available nonproprietary alternatives. This would greatly reduce the unnecessary licensing burdens on standard adopters and the possibility of patent disputes. To sum up, it is advisable for SSOs to write both disclosure and licensing obligations in their patent policies. The two obligations could complement with each other enhancing the effectiveness and efficiency of SSOs IP policies.

It is unrealistic to always expect that all essential claims in a standard would be promptly disclosed. Even the most experienced technical representative of a company could not guarantee that he is aware of all the patents and patent applications in his company's complicated patent portfolios. As discussed previously[187], the knowledge triggers disclosure obligations should apply the 'personally known' standard. So when an oversight happens due to individual representative's limited knowledge, it is unfair to impose liabilities of nondisclosure. Under such circumstances, a default licensing obligation is advisable to deal with the unintentional failure to disclose. For example, an SSO might adopt a rule that caps the royalties that can be charged on undisclosed IP rights.[188] Any unintentional undisclosed patents emerging after the standard's adoption would be licensed on the same condition as the disclosed ones. In order to promote complete disclosure or punish intentional failure to disclose, an SSO IP policy might even try to impose royalty free licensing obligations. It seems a little extreme, however, could totally resolve

[187] See pages 68 and 69 of this paper.
[188] See supra note 24, at 1962.

the potential patent holdups problems. Besides, when a royalty-free licensing obligation is required, it is less important to impose disclosure obligations.

II.2.3.2 Royalty Free ("RF") Licensing Obligations

RF licensing obligations, although effective in handling patent holdups, are obviously unfavorable for patent holders. Currently only a handful of SSOs require RF licensing obligations which are gradually facing more doubts concerning their reasonableness. According to an empirical study of patent policies among telecommunications and computer-networking SSOs conducted by Professor Lemley, in 2002, only four out of forty-three SSOs studied require RF licensing.[189] Some of these SSOs impose RF licensing obligations to obviate the need for disclosure obligations. Some do this due to the organizations' traditional discouragement of proprietary technologies. Take the Internet industry for example, software consortiums working in open source managed the Internet to run on a set of open, non-proprietary protocols for a long time. As the Internet technologies develop, the SSOs gradually realized the inevitable involvement of proprietary technologies in Internet standards and began to consider changing the open nature of the Internet. These SSOs have changed their policies definitely acknowledging the importance of proprietary patents. Due to their historical attitudes towards proprietary technologies, however, they tend to impose stricter obligations to restrict the exclusive exploitation of patents in their standard-setting processes. Take W3C for example, its patent policy applicable in the process of developing web standards is designed to assure that standards produced

[189] Id, at 1905.

under the policy can be implemented on a RF basis.[190] The RF licensing requirements mandate each participant to license his essential claims without obligations of payment or other considerations to an unrelated third party.[191] Moreover, the RF licensing obligations in W3C policy are binding on participants for the life of the patents in question and encumber the patents containing essential claims, regardless of changes in participation status or W3C membership.[192] Such strict RF licensing requirements may be justified in a specific industry, e.g., the Internet, which used to operate on open protocols and non-proprietary standards. But by and large, an SSO that attempts to avoid paying inventors anything for their technology is going too far.[193] The fundamental right legally granted to patentees is the right to exclusively exploit their patents thus recouping the forgoing investments. Although standardization calls for compromise of patent rights' exclusivity, it is not fair for an SSO to compel participating patentees to forego all royalties for the technologies they contribute. In the US, both DOJ and FTC have taken the position in individual cases that an SSO rule that prohibits members from owning IP rights in a standard may violate antitrust laws.[194] While RF licensing obligations may not be exactly the same as denying all patented technologies in standardization, the sacrifices undertaken by patentees interested in standardization are almost the same. Besides, there are precedents that condemned unreasonably low licensing royalty rates obligated by SSOs as a violation of antitrust laws, which naturally makes RF licensing obligations face more antitrust challenges.[195] In addition, RF

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190 See W3C Patent Policy, Abstract, 5 February 2004, at: http://www.w3.org/Consortium/Patent-Policy-20040205/.

191 See W3C Patent Policy, § 3.1, 5 February 2004, at: http://www.w3.org/Consortium/Patent-Policy 20040205/. The RF licensing obligations have a few exceptions. See W3C Patent Policy, § 4, 5 February 2004.

192 Id.

193 See supra note 33, at 156.

194 See supra note 24, at 1944.

195 See Sony Elecs., Inc. v. Souncdview Techs., Inc., 157 F.Supp. 2d 172, 183 (D. Conn.

licensing obligations would also reduce the incentives for potential participants holding useful patented technologies to join in SSOs, therefore, denying actually suitable resources for developing standards with better performances.

II.2.3.3 Reasonable and Nondiscriminatory ("RAND") Licensing Obligations

II.2.3.3.1 Nondiscriminatory in RAND Licensing

Various SSOs patent policies fall in the middle of the continuum from no licensing requirements at all to mandatory RF licensing of all the necessary patents, most of which require licensing of essential claims on RAND terms. Such policies permit SSOs members to own proprietary technologies, meanwhile, guarantee the use of any interested standard adopters by requiring these members to commit in advance to licensing their patents on specific terms. This intermediate approach is a way of valuing IP while at the same time reducing the risk that IP rights may impede standardization and hold up innovation.[196] According to Professor Lemley's study in 2002, eighty-one percent of the SSOs with patent policies require RAND licensing.[197] However, relatively few of these SSOs clearly explain what is 'reasonable' and 'nondiscriminatory' and how these terms should be implemented in practice.

2001).

196 See Adam B. Jaffe, Josh Lerner and Scott Stern (editors), Innovation Policy and the Economy, National Bureau of Economic Research, the MIT Press, London, 2001, on page 119, Carl Shapiro, Navigation the Patent Thicket: Cross Licensing, Patent Pools, and Standard Setting.

197 See supra note 24, at 1906.

The nondiscrimination part of RAND licensing is relatively straightforward, at least in circumstances in which the IP owner has already licensed to others. [198] Basically speaking, 'nondiscriminatory' requires patentees to license their technologies on equally the same condition to all. It actually shares the essential meaning with the widely acknowledged 'Most Favored Nation' clause in international treaties. Charging different licensing royalties or negotiating into license agreements on different conditions should be forbidden for similarly situated standard adopters. Furthermore, an SSO participant who competes downstream with other adopters in the market for the standardized technology is supposed to treat its adopter-licensees no less favorably than it treats itself under 'nondiscriminatory' policies.[199] Due to the straightforwardness of the meaning of 'nondiscriminatory', it is relatively easy to examine the compliance status of the obligation. SSOs could require members who assert patents to make available to others a copy of all their licenses involving the patent.[200] On the one hand, potential licensees will be given the opportunity to make sure that the proffered licenses really were nondiscriminatory; on the other hand, when there is a dispute concerning discriminatory licensing, it is easier for either arbitrators or judges to prove and decide whether there is a violation or not by comparing the alleged discriminatory licenses.

II.2.3.3.2 Reasonable in RAND Licensing Obligations

The 'reasonable' part of RAND licensing is far from straightforward. It is probably because 'reasonable' is inherently flexible to interpret. There is no

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198 Id, at 1913.

199 See Daniel G. Swanson & William J. Baumol, Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power, 73 Antitrust Law Journal, 2005, at 29.

200 See supra note 24, at 1966.

one-size-fits-all policy that can specifically define the scope of reasonableness. The 'reasonable' requirements change all the time in response to different facts of different cases. Therefore, it is not at all surprising that virtually no SSO specifies the terms on which licenses must be granted beyond the vague requirement that they be 'reasonable'.[201]

It appears well accepted in the literature that the meaning of a RAND licensing requirement is ill-defined by SSOs which fail to explain it in more detail.[202] The materially unspecified obligations are considered to be useless in providing guidelines for appropriate licensing, even worse, may bring unnecessary disputes due to the potentially broad scope of interpretations. Some scholars point out that without the idea of what the term is, reasonable licensing loses much of its meaning and the uncertainty over the cost and scope of patent licenses may not prove much better that having no policy at all.[203] Some opine that a RAND commitment is of limited value in the absence of objective benchmarks that make clear the concrete terms or range of terms that are deemed to be reasonable.[204] Some commentators go so far as to argue that the vague RAND promise is a tool for misuse and SSOs should be held to possess an antitrust duty to implement inappropriate policies without clearly requiring licensing terms.[205] Admittedly, it is advisable for SSOs to set their RAND licensing policies as clearly as possible. When SSOs fail to elaborate upon the full meaning, however, it does not necessarily mean that RAND licensing obligations would definitely be applied confusingly and disorderly. We could always base on RAND licensing's underlying function

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201 Id, at 1964.

202 See Joseph Scott Miller, Standard Setting, Patents, and Access Lock-in: RAND Licensing and the Theory of the Firm, 40 Indiana Law Review 2007, at 377.

203 See supra note 24, at 1964, 1965.

204 See supra note 199, at 5.

205 See Robert A. Skitol, Concerted Buying Power: Its Potential for Addressing the Patent Holdup Problem in Standard Setting, 72 Antitrust Law Journal, 2005, at 728, 729.

and purpose to infer what the proper meaning of 'reasonable' is and how it should be applied.

A fundamental principle underlying the consensus approach to standards is that they should be 'open', with no one or few firms controlling the standard.[206] Once a standard is picked, any patents necessary to comply with that standard become truly essential and the standard itself is subject to holdup if these patent holders are not somehow obligated to license their patents. [207] Enjoining or threatening to enjoin would-be adopters from implementing the standard is totally against standardization's basic purpose of wide adoption. Potential implementers would not want to adopt a standard and invest in complying with it while facing the risk of patent injunctions. A licensing obligation thus is designed to ensure interested standard adopters to access standard-essential patent licenses. Furthermore, in order to prevent ambitious patentees from charging royalties unfairly higher than their contributions, a 'reasonable' restriction is added to the licensing obligations, which now could more effectively control patent holders' exclusive exploitations of their proprietary technologies. Therefore, a RAND licensing obligation is supposed to function as a safety valve to ultimately prevent patent holdups and guarantee procompetitive standardization. It reallocates an appropriate portion of patentees' exclusive rights to adopters' access rights and "ensures that a participant will not significantly hinder the proliferation of the standard by threatening to unduly interfere (e.g., attempt to license at an overvalued royalty rate) or enjoining others (e.g., via an

[206] See Rochelle Cooper Dreyfuss, Diane Leenheer Zimmerman, Harry First (editors), Expanding the Boundaries of Intellectual Property - Innovation Policy for the Knowledge Society, Oxford University Press, at page 81, Carl Shapiro, Setting Compatibility Standards: Cooperation or Collusion? 8 June 2000, at: http://faculty.haas.berkeley.edu/shapiro/standards.pdf.

[207] See supra note 202, at 374.

injunction) from practicing the standard because of its patent." [208] As long as the RAND promise is construed according to its underlying function, it is hard to know what more the SSOs that rely on it should be required to say to make it an effective means to eliminate post-adoption holdup.[209]

It seems unwise for SSOs spending fewer efforts than they should on spelling out the RAND promise's details. Actually, there is little the SSOs can do, even they wish, to literally elaborate the meaning of 'reasonable' or to set some test standards for it. Moreover, SSOs might face antitrust challenges if they explain 'reasonable' too specifically. In practice, some SSOs expressly forbid discussions of detailed licensing issues when a standard is under consideration, presumably for fear of antitrust liability.[210] For example, IEEE clearly states in its policy that it takes no position on, and has no responsibility for determining, the reasonableness of disclosed royalty rates or other licensing terms and conditions.[211] Such SSOs deliberately leave the RAND promise vague in an effort to avoid the appearance of illegal buyers' cartels. Besides the fear of violating antitrust laws by obligating 'unreasonably low' royalty rates, SSOs should avoid enunciating 'reasonable' royalty rates due to their organizational restrictions. An SSO primarily serves as a platform gathering related entities to formulate the technical specifications and other general plans such as implementations, managements or modifications with regard to standards. As an organizer and a coordinator in standardization, an SSO would put itself in a weird position if it also deals with individual agreements of specific licensing terms, which is supposed to be negotiated

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[208] See Michael J. Schallop, The IPR Paradox: Leveraging Intellectual Property Rights to Encourage Interoperability in the Network Computing Age, 28 American Intellectual Property Law Association Quarterly Journal, 2000, at 230.

[209] See supra note 202, at 378.

[210] See supra note 24, at 1965.

[211] See IEEE-SA patent material: Understanding Patent Issues During IEEE Standards Development, no. 39, at: http://standards.ieee.org/board/pat/faq.pdf.

restrictedly between the licensing parties. Furthermore, it is also inappropriate for an SSO to stipulate uniformly specific licensing rates in its patent policy. Obviously because, patents differ in their likely validity, their importance to the standard, and the ease with which they can be designed around.[212] A 'one-size-fits-all' royalty rate won't be able to work well for patent licenses.

II.2.4 Conclusions

Patent disclosure and patent licensing obligations are the most important policies for a private SSO to adopt to restrict the exclusive exploitations of patents essential to the proposed standard. Patent disclosure requires that all essential patents, either issued patents or pending patent applications, as long as they will be necessarily infringed by implementing the final standard, be disclosed as soon as reasonably possible in the process of standardization. This obligation makes it possible that the proprietary characteristic of a proposed standard be fully realized by the standard-setting participants. Patent licensing requires that all patents included in the technical specifications of a standard are available for use with the price of non-discriminatory and reasonable royalties. Patent licensing obligation makes sure that the ultimate standard is widely adopted and is not subject to any individual manipulation; meanwhile, it protects the patent holders' legal patent rights by rewarding them with reasonable royalty charges. Patent disclosure and patent licensing assist each other in preventing and resolving 'patent holdup' problems in standardization. The combination of these two obligations constitutes the most effective private-sector regulations that an SSO IP policy could adopt, for the purpose of regulating 'patent holdup' and ensuring

[212] See supra note 24, at 1965.

procompetitive standardization. It is reiterated that the patent disclosure and patent licensing obligations discussed in II.2.2 and II.2.3 are applicable in private technical standardization regardless of different jurisdictions. The essential principles and requirements of the two obligations as discussed above should constitute the most important portions of private-sector regulations in relation to patent-related issues in standardization, even if there are no written SSOs IP policies. Meanwhile, some specific requirements in relation to patent disclosure and patent licensing as discussed apply similarly when the public-sector patent laws (as discussed in Chapter III.2) are enforced. For example, RAND licensing is advisable to be adopted by courts when deciding licensing royalties involved in disputes in standardization. The interpretations of RAND licensing herein can be referred when the patent law lacks of detailed provisions on royalty amounts.

Chapter III The Public-sector Regulations on the Patent-related Issues in Standardization and the Legal Enforceability of SSOs IP Policies – Mainly in the Context of Chinese Law

Chapter II discusses private-sector regulations for standardization mostly in the form of SSOs IP policies. An SSO IP policy is a part of the bylaws of the organization, the patent disclosure and patent licensing obligations of which play important roles in curbing the patent holdup problems. However, such private-sector regulations, no matter how effective and specific, are still not formal legislations. When there is noncompliance with such private-sector

policies, it is necessary to turn to official laws to ultimately enforce the private policies. Besides, it is impossible for an SSO IP policy to be sufficiently comprehensive to cover every aspect of patent-related issues and to stipulate every detail of potential rights and obligations. Moreover, due to the inherent vagueness of certain terms, e.g., 'reasonable', it is not practical for an SSO mainly as a technological joint venture to specifically define those terms in its IP policy. When it comes to blank areas an SSO IP policy fails to elaborate, or there are disputable interpretations as regards the policy itself, it is even more important to rely on applicable laws and legal principles to interpret the IP policy and to clarify the rights and obligations in standardization. These laws and legal principles are public-sector regulations, which are characterized as formal, sophisticated and effective when dealing with the patent-related issues in standardization. Chapter III will respectively discuss the applicable laws and legal principles, which may assist in enforcing the SSO IP policies or perform the same function to prevent or resolve the abovementioned patent-related issues in the absence of private-sector policies. It is highlighted that the following discussions, unless specified otherwise, are in the context of relevant Chinese laws. Available doctrines and principles from other jurisdictions, especially from the US, are referred with the view of providing applicable guidance for Chinese legislation and practice in standardization. Since there are no well-established private SSOs and private SSOs IP policies in China, the analysis below in relation to the applicability of SSOs IP policies tends to be normative. In other words, the said analysis pertains to how should Chinese laws be applied to enforce or interpret Chinese private SSOs IP policies in the near future.

III.1 The Application of Contract Law as regards SSOs IP Policies and Patent-related Issues in Standardization

III.1.1 The Nature of SSOs IP Policies

In China, the bylaws of private organizations do not belong to the formal legislation system, which generally includes laws, administrative regulations and local (autonomy) regulations.[213] The nature of the bylaws of private associations or organizations has always been a controversial topic in legal academia. There are mainly two theories regarding the nature of private organizations' bylaws [214], which are also the two different theories respectively held by civil law countries and common law countries. The autonomy theory supported by civil law countries provides that the bylaws of private organizations are usually considered to be set up and enforced by the organizations.[215] As long as the content of the private bylaws do no violate official laws and regulations, the organizations themselves have the autonomy to implement their bylaws within the organizations. Many scholars of common law systems, however, hold the contract theory that the bylaws of private organizations have contractual binding effects within the organizations. That is, a bylaw is actually a contract agreed between the organization and the members of it.[216] In practice, a US court once noted,

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[213] See Legislation Law of China, Article 2.

[214] See Wang Aijun, The Legal Nature of Companies' Articles of Association, China Law Information, 2007, at: http://vip.chinalawinfo.com/newlaw2002/slc/SLC.asp?Db=art&Gid=335584708; See Xu Lingjie, The Nature of Companies' Articles of Association, Journal of Sichuan College of Education, volume 20.11, 2004; See Jiang Tingting, A Brief Discussion of the Nature of Companies' Articles of Association, Journal of Jining University, volume 2, 2008.

[215] See Sun Yuguo, The Nature of Companies' Articles of Association, Co-operation Economy, volume 4, 2007.

[216] See Gu Minkang (Law School Professor of the City University of Hong Kong), Another

"…the members of voluntary associations and the associations themselves are contractually bound to follow the bylaws, rules, and regulations of the association…". [217] The following text will respectively discuss the autonomy theory and the contract theory, so as to figure out which one of them is more appropriate in deciding the nature of an SSO IP policy.

III.1.1.1 The Autonomy Theory in Analyzing SSOs IP Policies

In China, the autonomy theory is widely supported, while mostly in analyzing the nature of memorandum and articles of association of companies. For a company incorporated under the Chinese company law, its memorandum and articles of association govern the relationship between shareholders and directors and also the relationship between the company and the outside world. The enforceability of a company's memorandum and articles of association is guaranteed by well-established company laws and principles.

As far as SSOs IP policies are concerned, the autonomy theory cannot be simply applied. First of all, an SSO is different from a company set up under the company law. According to the General Principles of the Civil Law of China, an SSO as a private organization specifically set up for standardization could be categorized as a 'social organization'. [218] Unlike companies, there is no settled conclusion that an SSO will be recognized as a 'legal person' that can enjoy civil rights and assume civil obligations, especially for the small-

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Discussion of the Nature of Companies' Articles of Association, China Civil and Commercial Law 2006, at: http://www.civillaw.com.cn/Article/default.asp?id=27634.

[217] See Koefoot v. Am. Coll. Of Surgeons, 692 F.Supp.843,860 (N.D.III.1988).

[218] General Principles of the Civil Law of China was adopted at the Fourth Session of the Sixth National People's Congress, promulgated by Order No. 37 of the President of the People's Republic of China on 12 April 1986, and effective as of 1 January 1987. It has been amended for several times and it is the current civil law of China. See Article 36 of the General Principles of the Civil Law of China for 'social organizations'.

scaled SSOs or some joint ventures set up very informally to conduct standardization. Correspondingly, the internal bylaws of an SSO cannot be treated similarly as a company's memorandum and articles of association, which could be implemented autonomously by the company itself and guaranteed by company laws. Secondly, a private SSO as an organization aiming at technological standardization lacks necessary legal competency to autonomously enforce its internal policy without resorting to laws and legal authorities, especially when there are disputes or noncompliance involved in the implementation of its IP policy. Thirdly, it seems that the existing SSOs have no intention to enforce their IP policies by themselves at all. From the SSOs I examined in this paper [219], their IP policies, if any, usually do not include the consequences of noncompliance. These policies merely enunciate the disclosure and licensing obligations while do not further clarify what should be done if the patentees fail to fulfill the stipulated obligations.[220] Even if those SSOs are recognized legal entities and possess the ability to enforce their policies by themselves, there are no specific provisions in their IP policies for them to rely on. It is obvious that we cannot apply the autonomy theory in analyzing the nature of an SSO IP policy. [221]

III.1.1.2 The Contract Theory in Analyzing SSOs IP Policies

A patentee's failure to disclose his essential patent or to license his patent on RAND terms according to the IP policy of the SSO he joined in bears great resemblance to a breach of agreement. Besides, it has been a long-standing argument in common law systems that the bylaws of private organizations are

[219] See supra note 145 of this paper, for the collection of SSOs examined.
[220] For example, see W3C patent policy, IETF IP policy, ANSI patent policy, etc.
[221] See supra note 215 and the text accompanying it for autonomy theory.

in nature contracts between the organizations themselves and their members.[222] However, it does not necessarily mean that the contract theory is completely applicable in analyzing SSOs IP policies.

An SSO IP policy is usually drafted either by members of the SSO or a group of experts invited by the SSO, or both.[223] It does not matter whether the IP policy is drafted by people independent from the SSO and whether there are specific procedures for drafting the IP policy or not. Ultimately, an SSO IP policy governing the exploitation of patent rights is unilaterally drawn up in the name of the SSO. Although the SSO IP policy is designed to clarify rights and obligations, it still lacks some basic features of a traditional contract. Generally speaking, a contract is an agreement as a result of mutual negotiations between two or more parties on a voluntary basis. In China, a contract is defined as an agreement establishing, modifying and terminating the civil rights and obligations between subjects with equal status.[224] Obviously, an SSO IP policy involves no bargain or negotiation in relation to rights and obligations. Neither is there an explicit meet of minds. Not to mention the commonly known offer and acceptance when concluding a contract.

Some people may resort to the idea of 'standard form contracts' in order to enforce SSO IP policies in the context of contract law.[225] In China, the corresponding concept refers to 'standard terms' in a contract, which are clauses prepared in advance for general and repeated use by one party and

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222 See supra notes 216 and 217.

223 Some SSOs have their special teams in charge of developing their IP policies. For example, W3C has its Patent Policy Working Group and IETF has its IPR Working Group.

224 See Contract Law of China, Article 2.

225 A standard form contract usually means a contract between two parties that does not allow for negotiations (with exceptions). It is often a contract that is concluded between parties with unequal bargaining powers,

not negotiated with the other party in concluding a contract.[226] Admittedly, an SSO IP policy does share common ideas with standard form contracts, e.g., lack of negotiations, unequal bargaining power of parties, the purpose of repeated use, etc. However, once taking into consideration of the special role an SSO is playing in standardization, it would be perplexing to treat an SSO IP policy as a kind of standard form contract and the SSO to be one party of the contract.

Generally speaking, an SSO merely is a platform gathering interested participants to develop standards. Although the proposed standard is set up and published in the name of the SSO, the organization itself will not economically benefit from the final adoption of the standard. The exploitation of the patents in the standard will not affect the vital interest of the organization either. It is the individual participants who engage in standardization that will be affected by the proposed standard, technically and economically. Whether or not the participants own essential patents of the proposed standard, they unanimously care about what the SSO IP policy has specifically stipulated. On the one hand, as to participants holding essential patents, they attempt to explore their exclusive rights to the maximum extent within the permissible range of the IP policy. On the other hand, all participants are concerned about whether the IP policy is effective enough to ensure them to use the proposed standard without being manipulated by essential patents holders. The SSO itself actually has no major interest in relation to the implementation of its IP policy. In other words, the noncompliance with the SSO IP policy would not cause critical loss to the organization. In practice, disputes in standardization often arise in the course of patent litigations between standardization participants, not in litigation to

[226] See Contract Law of China, Article 39.

which the SSO is a party.[227] Therefore, it is inappropriate to consider an SSO IP policy as a standard form contract with the SSO being one of the parties.

The requirements of essential patents, patent disclosure and patent licensing in an SSO IP policy, as specifically discussed in the last chapter, provide major rights and obligations for all standardization participants. Such rights and obligations are restrictedly interrelated among participants of the standardization. Therefore, the specific part of an SSO IP policy which clarifies rights and obligations as regards patent rights could be reasonably regarded as a contract between participants of the SSO. Unlike ordinary contracts reached through the process of negotiations between the two parties, such a contract is considered to be concluded based on the parties' specific conducts. That is, once interested entities decide to join in the SSO to develop standards together, they will enter into a contract with other participants in standardization and are obliged to fulfill the patent disclosure and licensing obligations, which are stipulated in the SSO IP policy.

In this regard, we may refer to the 'implied-in-fact contract' theory in the US to explain the conclusion of a contract. 'Implied-in-fact contract' is a common law term, which means "an agreement…founded upon a meeting of minds, which, although not embodied in an express contract, is inferred, as a fact, from conduct of the parties showing, in the light of the surrounding circumstances, their tacit understanding."[228] When it comes to an SSO IP policy, it means that a contract is concluded between participants of standardization the moment they officially join in the SSO. Instead of being negotiated by related parties, such a contract is special in the sense that it has already been drafted in

[227] See supra note 24, at 1915.
[228] See the US Supreme Court decision on Balt. & Ohio R.R. v. United States, 261 U.S. 592, 597, 58 Ct.Cl. 709, 43 S.Ct. 425, 67 L.Ed. 816 (1923).

advance by an unrelated third-party—the SSO. Currently, there are no such stipulations or adopted principles in Chinese contract laws as regards 'implied-in-fact contract' theory. It is strongly suggested that the said theory be introduced to Chinese contract laws so that the nature of an SSO IP policy would be well identified to be a contract between the standardization participants.

After we identify an SSO IP policy to be a special kind of contract, members or participants of the SSO may correspondingly resort to liabilities for breach of contract when others fail to fulfill the obligations stipulated by the policy. In this sense, there should not be many differences applying contract law to SSO IP policies as to traditional contracts. However, due to the uniqueness of an SSO IP policy as a contract, special considerations have to be taken applying contract law. Besides, the contract law itself has limited scope of applications, which makes it incapable on some occasions to fully enforce an SSO IP policy.

III.1.2 A Few Noteworthy Aspects Applying Contract Law to Enforce SSOs IP Policies

First and foremost, in order to apply contract law to interpret and enforce an SSO IP policy, the policy should be clearly notified to the members or participants of the SSO. It is worth mentioning that an SSO IP policy as the bylaw of the organization at most would bind its members or other participants who join in the ongoing standardization. The policy only clarifies rights and obligations in relation to the exercises of patent rights within the organization. In addition, it is also fair and reasonable to expect that joining an

SSO or participating the standardization conducted by an SSO would sufficiently constitute a commitment to abiding by the bylaw of the organization. The consent of standardization participants to comply with an SSO IP policy actually means that a special contract is reached among those participants. Therefore, it is particularly important for the SSO IP policy to be clear and explicit in order to function as a contract.

Some existing SSOs IP policies state in the very beginning that their members or interested participants should be aware of the obligations and comply with the policies. Take W3C for example, "the following obligations shall apply to all participants in W3C working groups" is clearly stated in the first few lines of its patent policy. [229] ANSI also declares that "every ANSI-Accredited Standards Developer shall comply with the normative policies contained in this section" in an obvious way in its patent policy.[230] Some SSOs may not emphasize the obligations of compliance as obviously as W3C or ANSI does. They tend to incorporate similar statements in their policies regarding the importance of obligations. As the IPRs in IETF Technology points out: "The IETF policies about the Intellectual Property Rights…are designed to ensure that IETF working groups and participants have as much information about any IPR constraints on a technical proposal as possible".[231] So long as the member is on notice of the rules with which it must comply, those rules properly can be deemed part of the contract.[232] Even the SSO IP policy is never brought to the attention of SSO members, it is customary to assume that mere membership in the SSO or engagement in the

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[229] See W3C Patent Policy, § 6, 5 February 2004, at: http://www.w3.org/Consortium/Patent-Policy-20040205.

[230] See ANSI Patent Policy, § 3.0, 2007, at: http://publicaa.ansi.org/sites/apdl/Documents/News%20and%20Publications/Links%20Within%20Stories/ANSI%20Patent%20Policy.doc.

[231] See Abstract of Intellectual Property Rights in IETF Technology, at: http://www.isi.edu/in-notes/rfc3668.txt.

[232] See supra note 24, at 1910.

standardization would suffice an agreement to the terms of the policy.[233] Since members of an SSO usually have no bargaining power as regards the IP policy (unless the policy is drafted collectively by them), it is more important to clearly inform these members the specific stipulations of the policy, which is actually a contract concerning their major rights and obligations. Especially when the SSO IP policy is changed, the amendments to the IP policy should be promptly notified to the members or participants of the SSO. Only in this way can the parties be well-informed of the contract they enter into, thus ensuring the implementation of the policy.

Secondly, pertinent principles or customary rules of contract law should be applicable when there are different interpretations or understandings of an SSO IP policy. Obviously it is preferable for an SSO to clearly and comprehensively set out all obligations for its members. As a matter of fact, however, it is very difficult for an SSO IP policy to cover every aspect and detail of the obligations within limited space. Moreover, as every participant attempts to interpret the wording of the SSO IP policy in the way that favors himself the most, it is unavoidable that there will always be different understandings with regard to the same regulations of the policy. For example, in the famous Rambus case, disputes arose in almost every aspect as regards 'what, when, how, and to whom the members must disclose patent information' due to the patent policy's lack of defining details.[234] Even if the SSO IP policy is further specified, there will still be some important terms that cannot be materially explained in writing, such as 'reasonable' in RAND licensing. Under such circumstances, the customary practice of contract law may be applied to consistently interpret an SSO IP policy. Take Chinese

[233] Id.
[234] See supra note 130, at 476.

contract law for example, for contract parties' disputes arising from different understandings of any clause of the contract, it is stipulated that the true intention of the clause in question shall be determined according to the terms and expressions used in the contract, the contents of the relevant clauses of the contract, the purpose for concluding the contract, the transaction practices and the principle of good faith.[235] Therefore, if participants of an SSO could not reach a unanimous understanding of what exactly does the IP policy obligate and file litigations in front of courts for breach of contract, the Chinese courts could clarify the obligations in the SSO IP policy applying appropriate principles of Chinese contract law, e.g., analyzing the genuine purpose of the IP policy. SSOs IP policies are drafted mainly aiming at preventing the involved patents from being exclusively manipulated by their owners. Therefore, in interpreting the detailed obligations of the IP policy when the policy is unclear or disputable, we could first analyze the aims which the policy is to achieve. If the policy explicitly or implicitly advocates early and complete disclosure, we could infer the meaning of 'as soon as possible' or patents 'related to' standardization in absence of the policy's specifications. The purpose of the IP policy is also referable when we define the requirements of 'reasonable' licensing terms. Besides, courts could also interpret the detailed requirements of an SSO IP policy by referring to the industry custom, the common knowledge or the particular course of dealing of the participants in standardization. In Rambus, for example, the plaintiff argued that the IP owner should be bound not only by JEDEC's express IP policy, which covered issued patents, but also by the unwritten understanding of all members that pending patent applications should also be disclosed.[236] Thus, if it is customary in standardization to consider that a duty to disclose in

[235] See Contract Law of China, Article 125.
[236] See supra note 24, at 1911.

an SSO IP policy should require disclosure of both issued patents and patent applications, it may be implied that Rambus and Infineon have agreed to disclose both their issued patents and pending patent applications. In a word, when an SSO IP policy is not specific enough as regards its obligations, it does not necessarily mean that we cannot implement such a policy.

III.1.3 Limitations of Enforcing SSOs IP Policies as Contracts

Contract laws have superiority in interpreting and enforcing an SSO IP policy, especially when there are disputes as regards noncompliance of the policy between members or participants of the SSO. However, due to limited areas of application or loopholes in contract laws, it is not advisable to completely rely on contract laws to enforce an SSO IP policy.

First of all, if there is no contract at all, it would be impossible to apply contract laws. Not all SSOs IP policies are comprehensively drafted as regards every detail of the exploitation of patent rights. Especially for small-scale SSOs or joint ventures set up for standardization, they lack the awareness and experience of appropriately regulating patent rights in standardization. Therefore, there will always be some areas that SSOs IP policies, if any, fail to cover. For example, some SSOs may just encourage patent disclosure instead of requiring it in their IP policies. In such cases, there won't be a binding contract. Although sometimes contract laws could fill in certain blanks as regards ambiguous terms of a contract by referring to actual circumstances, industry norms, actions of parties, purposes of the contract, etc., it does not mean that we can totally rely on contract laws to create an IP policy out of nothing. Besides, there are occasions that SSOs

deliberately ignore to mention specific obligations, such as licensing royalties, in order to avoid antitrust or the like liabilities. Under such circumstances, it would be inappropriate to enforce the IP policy as a contract since there is no intention to conclude a contract at all.

Another limitation of enforcing an SSO IP policy as a contract results from the privity of contracts. The doctrine of privity in contract law is generally acknowledged in both civil and common law systems. Simply speaking, it means that a contract has no binding effects on others except the parties to it. Only parties to contracts should be able to enforce their rights or claim damages as such. [237] There is no meet of minds for third parties during conclusion of a contract, therefore, such third parties will not undertake the contractual obligations and also cannot claim contractual rights. However, this doctrine has been criticized to be problematic in recent times, especially as regards contracts made for the benefit of third parties. In the US, not only parties to a contract but also a third party have the standing to enforce the contract, as long as the third party is the intended beneficiary of the contract.[238] In UK, the Contracts (Rights of Third Parties) Act 1999 also sets out the circumstances in which a third party would have the right to enforce a term of the contract.[239] In China, whether a third party would have the standing to enforce a contract is still in dispute. The controversy arises as a result of different understandings of Articles 64 and 65 of Chinese contract

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[237] See Wang Liming, The Research of Civil and Commercial Law, Law Press China, 1999, at 437. See also Rebecca Lim, The Doctrine of Privity of Contract, 2 October 2008, at: http://www.articlealley.com/article_655389_18.html.

[238] The principle of third party beneficiaries in contract law has been recognized by many states in the US. For example, for a third-party beneficiary to succeed on a breach of contract claim under New York law, the party "must establish (1) existence of a valid and binding contract between other parties, (2) that the contract was intended for his or her benefit, and (3) that the benefit to him or her is sufficiently immediate, rather than incidental, to indicate the assumption by the contracting parties of a duty to compensate him if the benefit is lost." See Synovus Bank of Tampa Bay v. Valley National Bank, 487 F.Supp.2d 360, 368 (S.D.N.Y.2007) (quoting BDG Oceanside, LLC v. RAD Terminal Corp., 14 A.D.3d 472, 473, 787 N.Y.S.2d 388, 390 (2d Dep't 2005)).

[239] See Section 1of UK Contracts (Rights of Third Parties) Act 1999.

law. Take Article 64 for example, it stipulates that “where the parties agree that the obligor performs the obligations to a third party, and the obligor fails to perform the obligations to the third party or the performance does not meet the terms of the contract, the obligor shall be liable to the obligee for the breach of contract”. Some scholars believe that it is actually the legal recognition of ‘contracts for the benefit of third parties’, which is similar with the corresponding theory of ‘third party beneficiary’ in the US contract law. Scholars with different viewpoints, however, consider Article 64 of Chinese contract law as a rule merely recognizing a different way to perform the contractual obligations. The third party mentioned in Article 64 lacks independent right of claim based on the contract, therefore, can not enforce the contract as a party. In this regard, the ‘third party’ in Article 64 differs from ‘third party beneficiary’ recognized in other legal systems and the contract described in this article is not drafted for the benefit of the ‘third party’. Currently, there is no explicit stipulation of ‘contracts for the benefit of third parties’ in Chinese contract laws. Amendments to Contract Law of China in relation to acknowledgment of such contracts have been put in legislation agenda.

Broadly speaking, an SSO IP policy has binding effects on both its members and non-members who participate in ongoing standardization conducted by the SSO. Therefore, when we enforce the SSO IP policy as a binding contract, the parties to the contract should be strictly restricted within the boundary of members and participants of the SSO. That means only members and participants of the SSO could claim their rights against other members’ or participants’ noncompliance with the IP policy. As for entities which are neither members nor participants of the SSO, theyare not obliged to abide by the SSO IP policy, therefore, no contracts exist between those

outside entities and the members or the participants. Consequently, outsiders have no such standing to require members or participants of the SSO to fulfill obligations even if these members or participants have contractually committed themselves to the SSO IP policy. When these nonmembers are denied applying the final standard because an essential patentee refuses to grant a license as the SSO IP policy required, they cannot sue for breach of contract since in the first place they are not parties to the contract. It is troubling for all members of the public outside the SSO. Besides, it is also against the genuine purpose an SSO IP policy, which is to restrict the exercise of exclusive patent rights so that the standard developed by the SSO will be adopted as widely as possible. When an SSO requires its members or participants to disclose or license their patents in its IP policy, it is supposed to require them to fulfill their obligations to everyone who is interested in applying the final standard, not just to other members or participants of the SSO. Here is the area where contract laws seem to be helpless. Due to the nature of privity, contract laws cannot regulate rights and obligations beyond parties to a contract. Since there is no binding contract between members or participants of the SSO and the rest of the whole society, members of the public outside the SSO presumably have no contractual rights in relation to the SSO IP policy. Some people may resort to the idea of 'third party beneficiary' or 'contracts for the benefit of third parties' supporting nonmembers' contractual rights based on the SSO IP policy. Not to mention that China hasn't officially acknowledged 'contracts for the benefit of third parties', even in other legal systems which have explicit rules of 'third party beneficiary' in contract laws, it is a little far-fetched to consider members of the public as third parties to SSOs' contract-like policies. In the US, only when the third party is the intended beneficiary of the contract could he enforce the

contract in his own right.[240] In UK, the Contracts (Rights of Third Parties) Act 1999 stipulates that in order for a third party to enforce a term of the contract, the third party has to be expressly identified that he may enforce the contract or he is conferred a benefit by the contract.[241] As far as the existing SSOs IP policies are concerned, those SSOs do not identify the general public as the beneficiaries of their IP policies. Even though SSOs may actually hope that all members of the public could benefit from standards developed and promoted, hardly any of them express their hope in writing in their IP policies. Besides, courts generally would not interpret a contract to render the public at large a beneficiary.

In conclusion, members of the public outside the SSO lack the standing of enforcing its IP policy by applying contract laws. This is the major limitation of considering an SSO IP policy as a contract between members or participants of the organization. In order to assure that members or participants of an SSO would fulfill their commitments to reasonably exploiting their patent rights within the whole society, alternative ways apart from contract laws have to be sought to empower the general public to enforce the SSO IP policy.

III.2 The Application of IP Law as regards SSOs IP Policies and Patent Holdups in Standardization

An SSO IP policy governs the exercises of patent rights. Since contract law has its limitation enforcing the IP policy, we may consider applying IP law directly to regulate the exploitations of patent rights in standardization. After

[240] See supra note 238.
[241] See UK Contracts (Rights of Third Parties) Act 1999, § 1(1) (2) (3), at: http://www.opsi.gov.uk/ACTS/acts1999/ukpga_19990031_en_1.htm.

all, patent law specializes in coping with patent licensing, patent infringement and the like patent-related disputes. In general, patent-related disputes in technical standardization arise in mainly two aspects: patent disclosure and patent licensing, which are also the major obligations required by SSOs IP policies. When an SSO member holding essential patent fails to disclose his patent as the SSO IP policy requires, is there any applicable principle of patent law dealing with the nondisclosure? When a patentee refuses to license his essential patent to other standard adopters or charges unreasonably high royalties for using his patents in standardization, which rule of patent law could potential licensees rely on in order to obtain a reasonable license?

III.2.1 An Introduction of Chinese Patent Laws

At present, the Patent Law of China in force is the third revised version of the first Patent Law adopted in 1984.[242] Although the latest revision took place quite recently, the current Patent Law of China is relatively young and still maintains many characteristics of the original version, which was enacted in the first few years of the Economic Reform and Opening up of China.[243]

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[242] The Patent law of China was adopted at the 4th Session of the Standing Committee of the Sixth National People's Congress on 12 March 1984. Amended by the Decision Regarding the Revision of the Patent Law of the People's Republic of China, adopted at the 27th Session of the Standing Committee of the Seventh National People's Congress on 4 September 1992. Amended for the second time by the Decision Regarding the Revision of the Patent Law of the People's Republic of China, adopted at the 17th Session of the Standing Committee of the Ninth National People's Congress on 25 August 2000. Amended for the third time by the Decision Regarding the Revision of the Patent Law of the People's Republic of China, adopted at the 6th Session of the Standing Committee of the Eleventh National People's Congress on 27 December 2008.

[243] The Reform and Opening up policy was launched at the Third Plenary Session of the 11th Central Committee of the Communist Party of China in 1978, with the leader Deng Xiaoping being the ‘chief architect’. The policy was designed to help China achieve the modernization of agriculture, industry, science and technology, as well as the military. It created a brand new era in Chinese history known as ‘Reform and Opening up’ to the outside world. For more information on the Chinese ‘Reform and Opening up’ policy, see

During the past two decades, science and technology were the major targets of Chinese modernization and were considered to be the first productive force.[244] The Patent Law of China then, enacted under the circumstance of promoting technological modernization, was undoubtedly supposed to undertake the mission of encouraging and protecting the development of technology. It is clearly stated in the first article of the general provisions of the Patent Law of China that "this law is enacted to protect the legitimate rights of patentees, to encourage inventions-creations and to promote their applications, to enhance the ability of innovations and to promote the advancement of science and technology and the development of economy and society".[245] Apart from some explanatory and procedural rules on patent applications or patent examinations, the Patent Law of China focuses mainly on the protection of patent rights and remedies for infringing the protected patent rights. Throughout the whole passage of the current Patent Law of China with altogether 76 articles, there is hardly any article as regards how to regulate or restrict the exercises of patent rights except the rules of compulsory licensing.[246] It shows an inclination for Chinese legislators to encourage and promote technological development. Such a protective patent system may have promoted the advancement of technology, however, it tends to accommodate overexploitations of exclusive patent rights in the meantime.

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http://en.wikipedia.org/wiki/History_of_the_People%27s_Republic_of_China_%281976%E2%80%931989%29.

244 "Science and technology are the first productive force." The great leader of China, Deng Xiaoping, first came up with this statement during the conversation with the president of Czechoslovakia, Husak Gustav, in 1988.

245 See Patent Law of China, Article 1.
See translated text at: http://www.chinaiprlaw.com/english/laws/laws4.htm.

246 "Compulsory Licensing" is provided in Articles 48 to 58 in the Patent Law of China. The application of the "compulsory licensing" rules in patent licensing in standardization will be explored in detail in Chapter III.2.3.

As shown by the DVD patent fee case discussed previously [247], the lack of pertinent regulations in respect of the proper boundary of exercises of patent rights could facilitate ambitious patentees to unreasonably exploit their exclusive patent rights. When patentees could obtain profits through their unrestricted patent exploitations in excess of their patents' contributions to the society, the substantial effectiveness of the patent systems will be compromised. When exercises of patent rights actually stall technological development or restrict fair competition or harm social welfare, it is time for patent laws to become more restrictive while less protective.

Actually, the necessity of controlling the exploitation of patent rights within an appropriate boundary was brought to legislators' attention during discussions of the third amendment of the Patent Law of China from 2005 to 2008. The balance between interests of patent right holders and the public, as well as proper restrictions that may be imposed on the exercises of patent rights were extensively discussed among legal scholars, practitioners from various institutions, government or judicial authorities and social agencies during a series of seminars organised by the State Intellectual Property Office of China ("SIPO") [248] for the third amendment to the Patent Law of China.[249] Based on

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[247] See Chapter I.5.2 from pages 23 to 25.

[248] The former body of SIPO is the Chinese Patent Office, founded in 1980. In 1998, during a reform to the governmental bodies, the name of the Chinese Patent Office changed to SIPO, which is directly subordinated to the State Council. Now, the Patent Office is affiliated to SIPO. The SIPO bears mainly the following responsibilities: to draft proposals of and amendments to patent-related legislations; to receive and examine patent applications for invention, utility model and design, to grant patents, to deal with requests for reexamination and invalidation, and to receive and examine applications for registration of layout designs of integrated circuits; to coordinate and harmonize international affairs in IP field; to administer nation-wide patent affairs; and to instruct local governmental agencies in administrative enforcement of the patent law. For more information, see http://www.sipo.gov.cn/sipo_English/.

[249] According to the online interview with SIPO, the third amendment of the Patent Law of China mainly follows three basic principles: First, it has to appropriately balance the interest between patent holders and the public. Second, it should comply with international norms by referring to other countries' successful experience; meanwhile, comprehensively take into consideration of China's specific situation. Third, it should assure the legal consistency and applicability of the Patent Law of China. See the Latest Contents of the Draft of the Third Amendment of the Patent Law of China (consolidated in the Special

available experience from patent laws of foreign countries, several specific rules were proposed to be added to the new Patent Law of China in order to control the exploitation of exclusive patent rights. Among the suggestions such as the doctrine of patent misuse[250], equitable estoppel[251], patent prosecution laches,[252] etc.,[253] the doctrine of patent misuse is probably the most pertinent rule with regard to enforcing SSOs IP policies. As will be discussed in Chapter II.2.2, the doctrine of patent misuse and an SSO IP policy share the same goal of restricting the exercises of patent rights. Even when there is no SSO IP policy, the doctrine of patent misuse is still applicable in regulating patent holdups in standardization.[254] It is the major strength of applying patent laws to regulate exercises of patent rights in standardization, compared to contract laws which are only applicable when there are explicit SSOs IP policies. Chapter III.2.3 discusses the applicability of compulsory licensing provisions in the current Patent Law of China in relation to the patent holdup problems in standardization, especially when a patentee refuses to license his essential patent.

The thirdly revised Patent Law of China which came into effect from 1 October 2009, does not eventually incorporate the 'doctrine of patent misuse'

Subject of the Third Amendment of the Patent Law of China and its Implementing Rules), at: http://www.sipo.gov.cn/sipo/ztxx/zlfjqssxzdscxg/200701/t20070119_127871.htm.

250 Doctrine of patent misuse will be discussed in detail in Chapter III.2.2.

251 Estoppel is a common law principle that prevents a person from asserting or denying something in court that contradicts what has already been established as the truth. It is generally applied to complement the requirement of consideration in contract law. Equitable estoppel is a type of estoppel that bars a person from adopting a position in court that contradicts his or her past statements or actions when that contradictory stance would be unfair to another person who relied on the original position.

252 Patent prosecution laches doctrine is a defense in the patent arena typically involving a situation in which a patent owner sues an alleged infringer and the alleged infringer contends that the owner's delay in bringing suit was unreasonable and inexcusable, resulting in material prejudice to the alleged infringer.

253 These suggestions were proposed during the discussion of the third amendment of the Patent Law of China. See the Latest Contents of the Draft of the Third Amendment of the Patent Law of China (consolidated in the Special Subject of the Third Amendment of the Patent Law of China and its Implementing Rules), at: http://www.sipo.gov.cn/sipo/ztxx/zlfjqssxzdscxg/200701/t20070119_127871.htm.

254 As regards 'patent holdup', see supra note 94 and the texts accompanying it on page 45.

as discussed during the preparation of the third amendment. According to an SIPO officer in a press conference in response to why there is no provision added to the Patent Law of China in respect of prevention of patent misuse, the officer explained that the legislators are currently inclined of perfecting the system of patent protection first before focusing on preventing the patent rights from being misused.[255] Although the 'doctrine of patent misuse' was yet to be introduced to the current Patent Law of China, it doesn't mean that the same is without legislative merits. Chapter III.2.2 below is a discussion on a normative basis, trying to analyze whether there should be such a doctrine, and if so, what should the said doctrine specifically require in the context of Chinese patent laws and how it could be applied in the exercises of patent rights in standardization.

III.2.2 Doctrine of Patent Misuse

III.2.2.1 The Originality of the Doctrine of Patent Misuse – Lessons from the US

The patent misuse doctrine originally developed as a common law equitable affirmative defense to an infringement claim, similar to the traditional 'unclean hands' doctrine in tort law.[256] Simply speaking, only those patent holders having 'clean hands' should be legally supported to enforce their patent rights. In its most general terms, the patent misuse doctrine has come to

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[255] See news release, There Is No Provision on Prevention of Patent Misuse in the Newly Amended Patent Law of China, 27 December 2008, at http://news.sina.com.cn/c/2008-12 27/164616932758.shtml.

[256] See Mark A. Lemley, The Economic Irrationality of the Patent Misuse Doctrine, 78 California Law Review, 1990, at 1608.
Unclean hands, sometimes clean hands doctrine, is an equitable defense in which the defendant argues that the plaintiff is not entitled to obtain an equitable remedy on account of the fact that the plaintiff is acting unethically or has acted in bad faith with respect to the subject of the complaint—that is, with "unclean hands".

mean that "if a patent owner exploits his patent in an improper manner by violating the antitrust laws or extending the patent beyond its lawful scope, the courts will withhold any remedy for infringement—even against an infringer who is not harmed by the abusive practice."[257] There are some disagreements as regards when the misuse doctrine was first identified. Some believe it was first applied by the Supreme Court of the US in 1917 in the Motion Picture Patents case.[258] In that case, the patentee attempted to enforce tying[259] arrangements, which required that a prospective licensee of a patent also agreed to purchase unpatented products from him. The Court rejected the license restriction based on the fact that the patent license was imposed beyond the scope of the patent. It was held that the patent law could not justify such a restriction, nor would it permit the patent rules to be extended by contracts.[260] Some believe that the patent misuse doctrine was originated by name in the US Morton Salt case.[261] In Morton Salt, the defendant who allegedly copied the patent holder's machine submitted to the court a contract with a tie-in between the patentee and a licensee. The Supreme Court thus held that such a misuse rendered a patent unenforceable against anyone—even an outright infringer not to the license—until the improper practice has been abandoned and the consequences of the misuse of the patent have been dissipated.[262] Chief Justice Stone stated in Morton Salt:

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257 See Robert P. Merges, Note, Is the Patent Misuse Doctrine Obsolete?, 110 Harvard Law Review, 1997, at 1923.

258 See supra note 255, at 1609. See also Stephen Calkins, Patent Law: The Impact of the 1988 Patent Misuse Reform act and Noerr-Pennington Doctrine on Misuse Defenses and Antitrust Counterclaims, 38 Drake Law Review, 1989, at 180. See Motion Picture Patents Co. V. Universal Film Mfg. Co., 243 U.S. 502 (1917).

259 Tying, simply speaking, is the practice of making the sale of one good (the tying good) to the customer conditional on the purchase of a second distinctive good (the tied good). In the US, some kinds of tying, especially by contract, have historically been regarded to be anti-competitive, since consumers are harmed by being forced to buy an undesired good (the tied good) in order to purchase a good they actually want (the tying good).

260 See Motion Picture Patents Co. V. Universal Film Mfg. Co., 243 U.S. 513 (1917).

261 See Morton Salt Co. v. G.S. Suppiger Co., 314 U.S. 488(1942).

262 Id. at 493.

"The public policy which includes inventions within the granted monopoly excludes from it all that is not embraced in the invention. It equally forbids the use of the patent to secure an exclusive right or limited monopoly not granted by the Patent Office and which it is contrary to public policy to grant".[263]

No matter when it was legally recognized, the patent misuse doctrine in US patent laws was gradually applied to many other types of licensing practices and was broadly interpreted to cover a wider range of activities.[264] Lower courts of the US subsequently relied on broad language concerning misuse in the Supreme Court cases to create new misuse categories.[265] In addition to tying, which is the area where the patent misuse doctrine first developed, there are several other conducts that have been recognized to constitute misuses of patents. The examples, not necessarily exhaustive, include 'total sales royalties'[266], 'post-expiration royalties'[267], 'extension beyond patent term', 'resale price maintenance', 'price discrimination', 'noncompetition agreements', etc.[268] Briefly speaking, a patent misuse behavior is often characterized as exerting patent rights beyond the lawful scope stipulated by patent laws or restricting free competition protected by competition laws.[269]

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263 Id. at 494.

264 See supra note 257, at 1923.

265 See Dianne Brinson, Patent Misuse: Time for a Change, 16 Rutgers Computer & Technology Law Journal, 1990, at 368.

266 'Total sales royalties' means 'insistence by a patent owner on royalties on total sales or conditioning payment of royalties on items not covered by the claims of the patent'. See James B. Kobak, Jr., The Misuse Defense and Intellectual Property Litigation, 1 Boston University Journal of Science & Technology Law, 1995, at 13.

267 'Post expiration royalties' means royalties that continue to accrue after the patent expires.

268 See Stephen Calkins, Patent Law: The Impact of the 1988 Patent Misuse Reform act and Noerr-Pennington Doctrine on Misuse Defenses and Antitrust Counterclaims, 38 Drake Law Review, 1989, at 187.

269 Most of the US literature on the doctrine of patent misuse holds the similar idea that patent misuse usually means to improperly exploit patent rights either beyond the lawful scope or violating the antitrust or competition laws. See, e.g., supra note 257, at 1923; supra note 266, at 13.

III.2.2.2 Discussions of Patent Misuse in Context of Chinese Patent Laws

Although there is no official legislation, the concept of 'patent misuse' has been introduced to patent practice in China. In the aforementioned DVD patent fee dispute[270], Chinese scholars alleged that there had been patent misuse [271] behaviors since the patentee attempted to implement an invalid patent in China. On 4 December 2005, Professor Zhang Ping from Law School of Beijing University personally requested invalidation of a Chinese patent owned by Philips in the DVD patent pool.[272] On 4 January 2006, other four professors who are also intellectual property experts respectively requested invalidation of the same patent in front of the Patent Reexamination Board of SIPO.[273] Philips actually was uncertain about the validity of its Chinese patent being challenged. Instead of facing the risk that its patent might be totally invalidated by Chinese patent authority (SIPO), Philips began to negotiate with the professors. After near four-month's negotiation between Philips and the five professors, a Joint Statement was agreed and published on 10 December 2006. In the statement, Philips agreed to withdraw the challenged Chinese patent from the patent list of the DVD patent licensing agreement and promised to never claim rights of this patent

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[270] See page 23 to 25 of this paper.

[271] See subsequent discussions in relation to what is patent misuse defined in China.

[272] The patent was applied in China and owned by Philips. It is a patent of "transmitting and receiving method of code data, and its transmitter and receiver", CN95192413.3.

[273] These professors are Tao Xinliang from Intellectual Property Institute of Shanghai University, Shan Xiaoguang from Intellectual Property Institute of Tongji University, Zhu Xuezhong from Intellectual Property Institute of Zhongnan University of Economics and Law, Xu Jiali from Intellectual Property Centre of China University of Political Science and Law.
The Patent Re-examination board of SIPO takes charge of examining the request for invalidation of patent rights, re-examining patent applications which are rejected by SIPO, etc.

in China. That means the challenged patent owned by Philips is actually ineffective in China since it cannot be put in a patent pool for joint license any more, neither can it be separately licensed. Philips waived a great portion of its exclusive rights, only for the purpose of maintaining the validity of its patent in issue. Correspondingly, the five professors withdrew their requests for invalidation since they had achieved their major aim of preventing the patent of Philips from charging Chinese patent users royalties. This personal request for invalidation of a patent is not merely targeted to a single patent but more importantly to arouse the awareness for Chinese legislators to establish a set of IP rules to prevent patents from being misused, especially by foreign patentees, according to Professor Zhang Ping.[274]

Since there is no formal legislation, 'patent misuse' has various definitions in Chinese legal scholarship. Some scholars theoretically define patent misuse as an inappropriate exploitation of patent rights, which exceeds the legitimate scope or a proper limit and harms others' even the whole society's interests.[275] Some believe patent misuse generally means that a patentee inappropriately exercises his patent rights by refusing to license or leveraging his superior position, thus unreasonably restricting trade or unfairly affecting trade.[276] During the discussion of China's third amendment of Patent Law, it was summarized that patent misuse in China mainly arises in the forms of questionable patents, duplicated grants, inappropriate warning letters for patent infringement and so on.[277]

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[274] See Zhang Ping, Liu Chao, Review and Consideration on the Philips DVD/3C Patent Invalidate Commonweal Case, 05 Electronic Intellectual Property, 2007.

[275] See Liu Shuhua, the Antimonopoly Regulations of Patent Misuse in Standardization, 07 Lanzhou Academic Journal, 2006, at 21.

[276] See Xu Lifeng, Li Ning, the Research of Antitrust Issues in the Patent Area—A Discussion of the Misuse of Patent Rights, 04 Journal of Nanjing University, 1998, at 146 to 154.

[277] See pages 100 to 104 of this paper.

From the above discussions of Chinese practitioners and scholars, we may note that 'patent misuse' is defined more broadly in context of Chinese law than it was in the US. Not only exerting patent rights beyond the lawful scope is considered to be patent misuse (the same as the US) but also taking advantages of the loopholes of the patent system, such as exercising questionable patents, is also considered to constitute a patent misuse behavior. In other words, patent misuse in China includes not only misuse of a patent itself but also misuse of the patent system. The former misuse is characterized as exceeding the lawful scope required by either patent law or competition law. The latter derives from the flaws of the patent system.

I think it is unwise to mix these two kinds of misuse behaviors into one concept. Actually, the latter form of misuse—taking advantages of a faulty patent system—could only be prevented or regulated through improving the patent system of the country. The major question is not about exceeding a lawful scope but the patent being exploited is actually questionable or invalid due to the low standard of patentability required by patent laws. In Japan, the exploitation of invalid patents is considered to be 'abuse of patent right', which specifically means that a patentee claims his rights based on obviously invalid patent rights.[278] In my opinion, it is necessary to differentiate these two kinds of misuse and to stipulate different regulations in Chinese patent laws. The most obvious difference is that the patent in 'patent misuse' is valid while the patent in 'misuse of the patent system' is questionable in respect of its effectiveness, quality or even validity.

[278] See Japan's Kilby Case, 1998(O) No. 364, Supreme Ct., 11 April 2000.

III.2.2.3 Proposed Patent Misuse Regulations in Chinese Patent Laws and Their Applications in Standardization

During discussions of the third amendment of Patent Law of China, 'patent misuse' was not specifically discussed on its applications in technical standardization. However, we may infer from the above proposed definition of 'patent misuse' to conclude that a patent involved in standardization is considered to be misused if the patentee exploits his legally granted patent rights beyond a lawful scope or beyond reasonable limits, resulting in harming others' even the whole society's public interest or restricting fair competition protected by competition law.[279] Below is a discussion on how should the doctrine of patent misuse, if adopted by Chinese patent laws, be applied in regulating 'patent holdups' in standardization.

During the process of standard setting, standard implementing or standard revising, a patentee may manipulate his legally granted patent right beyond the limits required by SSOs or against the ultimate aim of standardization in order to control the proposed standards in pursuit of benefits he cannot achieve in open competition. The manipulative behaviors always arise in the context of patent disclosure and patent licensing. In formulating the technical specifications of a standard, a patentee may deliberately hide the information that his patent covers the proposed standard and later allege his exclusive patent right when the standard has been officially adopted. Or a patentee may disclose his essential patent but refuses to license or charges commercially unreasonable royalties to the standard adopters. Actually, a patentee's nondisclosure of his patent or refusal to grant license to others are perfectly

[279] See supra note 275.

ordinary conducts under normal circumstances. Whether a patent should be made known by the public or who is eligible to obtain the license to use a patent are up to the patent owner's unilateral decision. However, when it comes to standardization, a patentee's exclusive rights should be narrowed in the sense that the exercise of a single patent could affect the exercises of other patents involved in the final standard. Because of the competitive necessity for potential adopters to practice the final standard, particularly in industries characterized by network effects, the exclusive power of a patent in standardization will be amplified, compared to when it is individually exercised.[280]

A patentee's failure to disclose his essential patent to the SSO causes uncertainty to the proprietary extent of a technical standard. Regardless of whether the SSO has required patent disclosure obligations in its IP policy, the intentional nondisclosure of essential patents is contradicted with the open and transparent nature of standard aiming at widespread industry access. When such undisclosed patents are leveraged in the licensing phase, the standard thus could be easily captured by a few industry participants as a hostage against the whole society. If an SSO is not fully informed of the proprietary extent of the technologies under consideration for adoption due to a patentee's willful nondisclosure, especially when there are alternative nonproprietary technologies for the SSO to choose, it is reasonable to expect that the undisclosed patent should not be exploited as the malicious patentee wishes.

[280] See Janice M. Mueller, Patent Misuse Through the Capture of Industry Standards, 17 Berkeley Technology Law Journal, 2002, at 623.

The intentional nondisclosure of an essential patent is not a real 'use' of patent rights, not to mention exceeding the lawful scope required by patent law, yet it still could be regarded as a kind of patent misuse behaviors since it negatively affects free and fair competition.[281] The justification lies in the origin where the doctrine of patent misuse first developed. The patent misuse doctrine is a doctrine of equity originally created by courts in the US to further the public interest. [282] It can be broadly applied to prevent a patentee's actions or inactions contrary to the public interest. Only patent holders with 'clean hands'[283] are eligible to be protected by patent laws to enforce their patent rights. In standardization, when an essential patent holder intentionally fails to fulfill his disclosure obligation required by the SSO IP policy, the patent misuse doctrine should be applicable to deprive the patentee of any remedy, injunctive or monetary, for use of his patented technology. Even when the IP policy is not clear about the disclosure obligation, if there is adequate evidence to prove that the patentee does conceal his patent for the sake of capturing the proposed standard, the doctrine of patent misuse could also be applied as an affirmative defense to the patentee's allegations of infringement. If a patentee does not intentionally conceal his essential patent, e.g., due to the practical difficulties of figuring out his entire patent portfolios, it would be unreasonable to deprive his right to enforce his patent altogether. Under such circumstances, we may first resort to negotiations of licensing possibilities instead of directly applying the doctrine of patent misuse since the patentee does not intend to exploit his patent rights with 'unclean hands'. The above analysis of the applications of patent misuse doctrine as regards

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[281] As discussed, patent misuse generally means that a patent holder exploits his patent in an improper manner by either extending the patent beyond its lawful scope or negatively affecting competition.
The reasons why nondisclosure of essential patent will interfere with free and fair competition have been discussed in Chapter II.1 & II.2, from page 28.

[282] See supra note 255, at 1613.

[283] See previous discussion on 'unclean hands' on page 104.

nondisclosure of essential patents, is based on the existing doctrine of patent misuse from the US and is also applicable in Chinese practice.

Even after a patentee has disclosed his essential patent, he could still capture the proposed standard by setting licensing obstacles to potential standard adopters. He may either charge unreasonably high licensing fees or refuse to grant a license at all. Due to the inseparable nature of a standard as a package of a set of correlative technologies, potential licensees could be denied the access of using the standard only because one licensor's refusal to license. Originally, the doctrine of patent misuse in the US developed in a tying license case. For a long time, the doctrine was applied in the US most frequently in the context of patent licensing. Actually, there were always dissenting opinions contended that the doctrine of patent misuse in the US was too broadly defined that the legal rights of patentees might be unreasonably restricted. Some judges or scholars believed that excluding competitors from the use of a patent "may be said to have been of the very essence of the right conferred by the patent".[284] People valuing the exclusive rights and legal monopolies granted by patent laws believe that a patentee has unquestioned rights to refuse to license his patent at all and to impose whatever conditions he desires on the license.[285] In 1988, the US Congress placed substantial restrictions on an infringer's right to defend by adding two subsections to the three then-existing patent misuse safe harbors.[286] This 1988 Patent Misuse Reform Act provides that:

[284] See the Continental Paper Bag case, 210 U.S. 429 (1908).
[285] E.g. see Motion Picture Patents Co. V. Universal Film Mfg. Co., 243 U.S. 519-520 (1917). (Holmes, J. dissenting).
[286] See 35 U.S.C. § 271(d)(4)(5).

"No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of…having 'refused to license or use any rights to the patent' or 'conditioned the license of any rights to the patent or the sale of the patented product on the acquisition of a license to rights in another patent or purchase of a separate product, unless, in view of the circumstances, the patent owner has market power in the relevant market for the patent or patented product on which the license or sale is conditioned."[287]

Read literally, it seems that the safe harbors would permit a patentee to freely exercise his licensing right without being afraid of patent misuse defenses. In the context of standardization, it appears to permit a patentee holding an essential patent of the proposed standard to refuse to license or charge any amount of royalties to potential licensees who must use his patent in order to conform to the standard. That would be very upsetting for all the industrial participants who are interested in adopting technical standards. Actually, the safe harbor of refusals to license should not be interpreted so broadly as to exempt any such refusals from patent misuse scrutiny, especially when standardization is concerned. Due to the amplified power a standard would confer to an involved patentee's exclusive patent right, a patentee's unrestricted right of refusal to license to any standard adopters could pose much bigger threat than he solely exercises his patent rights without the platform of standardization. Standards, characterized as open, free access and widespread adoption, could not afford the risk of being captured by a single or a handful of industrial participants. The manipulative patentee could

[287] See 35 U.S.C. § 271(d).

deny others' access of using the standard by simply refusing to grant licenses or charging expensive royalties. The market monopoly or the unreasonably high benefits achieved from these behaviors actually exceed the lawful scope of the benefits a patent is supposed to bring to its owner. Therefore, the patent misuse defense should not be so circumscribed to preclude any assertion of a patent misuse defense in respect of standards capture. It can still be raised in cases of truly unreasonable refusals to license or unreasonably high royalties that harm the public's welfare.[288] Especially when a patentee intentionally fails to disclose his patent in the standard-setting process and then attempts to manipulate his licensing right against the following standard adopters, it is reasonable to expect that the doctrine of patent misuse should be applicable to prevent the evil patentee from exploiting his patent unrestrictedly. When determining whether a patentee's exercise of patent right in standardization constitutes a misuse, courts may refer to general guidelines such as whether the exercise of patent rights has exceeded the lawful scope; whether fair and free competition is restricted or whether the public interest is harmed. Besides, the following factors are also important for courts in determining patent misuse in standardization: whether the patentee's exploitation of his patent has stalled the wide adoption of the standard; whether the patentee has manipulated the standard as a tool for achieving high benefits far beyond the lawful scope he could normally achieve; whether other industrial participants even the whole society has suffered economic loss due to the patentee's exercise of his patent rights; whether technical competition and innovation are retarded. All of these could be referred to decide if a patentee has misused his patent right. The sensitivity of the patent misuse doctrine to the public policy concerns permits courts to consider whether a patentee in standardization extends his patent

[288] See supra note 280, at 680.

right beyond the statutory patent grant and propels his conduct into the realm of actionable patent misuse.[289] It is reiterated that the above discussions on the proposed application of patent misuse doctrine in standardization, although based on US precedents or experience, are similarly applicable in practice in China.

III.2.2.4 The Strengths and Limitations of Doctrine of Patent Misuse in Standardization

The most remarkable strength of the doctrine of patent misuse in dealing with the exercise of patent rights in standardization is that people using patent misuse defense need not to have prior interactions with the patentee. The patent misuse defense, justified on public policy grounds, supports the proposition that it should be potentially available to any entity denied a license to practice a patent on an industry standard.[290] In other words, the regulation of a patentee's exercise of patent rights in standardization is not limited to what the SSO IP policy has required and is not limited to only those standard adopters who actually participate with the patentee in the standard-setting process. In contrast to considering the SSO IP policy as a contract and relying on a patentee's commitment to patent disclosure or RAND licensing, the patent misuse doctrine could benefit a wider scope of interested standard adopters. Even without an IP policy, the patent misuse doctrine may still function to regulate the exercises of patent rights in standardization and achieve the ultimate goals that the IP policy tries to realize.

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[289] See supra note 280, at 683.
[290] Id. at 674.

Notwithstanding the above strengths, the patent misuse doctrine as discussed has inevitable limitations due to its equitable nature when it was first developed in the US. As a doctrine derived from the notion of equity, patent misuse could only be applied as an affirmative defense against alleged infringement. The rationale behind it is that courts merely wish to avoid aiding a misuser, rather than affirmatively to sanction him.[291] Therefore, people cannot actively sue a patentee for misusing his patent; instead, they can only use the patent misuse doctrine to defend themselves until they are involved in patent infringement cases. Besides, the remedy of patent misuse is also restricted to the equitable nature of the doctrine. In a US case, upon finding patent misuse, the court just refused to enforce the patent against the alleged infringer.[292] Sometimes such an equitable remedy is not enough to punish evil patentees who maliciously exercise their patent rights in standardization in order to capture standards and achieve unreasonably high profits.

From a personal viewpoint, I believe that the concept of patent misuse will, and shall be officially introduced into the Chinese patent laws in the near future. Given that 'compulsory licensing' being the only rules in the current Patent Law of China restricting the exercises of exclusive patent rights has limited scope of application (which will be discussed in the following context of Chapter III.2.3), there is great a need to include rules in Chinese patent laws to ensure that exclusive patent rights are exercised within a lawful scope. As to whether the patent misuse doctrine proposed to be included in the Chinese patent laws could be applied more aggressively than mere an affirmative defense, I believe this may be adopted at an even later stage after the introduction of the doctrine. If patent misuse doctrine were provided in

[291] See supra note 255, at footnote 78.
[292] See, e.g., Morton Salt, 314 U.S. at 492.

Chinese patent laws allowing people to actively sue a patentee's 'misuse' behavior, it would definitely invite concerns that such a doctrine might be abused and patent rights might be unreasonably restricted. After all, the Chinese patent system currently is still inclined to protect patentees' exclusive rights so as to promote technological development.

III.2.3 Compulsory Licensing

III.2.3.1 A General Introduction of Compulsory Licensing

Compulsory licensing is not a new concept which was included in important international IP conventions and treaties and in many national IP systems that comply with those international treaties. The Paris Convention for the Protection of Industrial Property ("Paris Convention") of 1883 provides that "Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licenses to prevent the abuses which might result from the exercise of the exclusive rights conferred by the patent, for example, failure to work."[293] The Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPs") also sets out specific provisions to be considered if the subject matter of a patent is authorized by the government for use by the government or third parties without the authorization of the patent holder.[294] Essentially, a compulsory license is "an involuntary contract between a willing buyer and an unwilling seller imposed and enforced by the state."[295] Although the specific terms of compulsory licensing are provided

[293] See Article 5A.(3) to (5) of the Paris Convention.
[294] See Article 31 of TRIPs.
[295] See Gorecki, Regulating the Price of Prescription Drugs in Canada: Compulsory Licensing, Product Selection, and Government Reimbursement Programmes, (Economic Council of Canada, 1981). See also Gianna Julian-Arnold, International Compulsory Licensing: The Rationales and the Reality, 33 IDEA: The Journal of Law and Technology, 1993, at 349.

differently in various patent systems of different jurisdictions, the three most prevalent compulsory licensing provisions are applicable where 1) a dependent patent[296] is being blocked, 2) where a patent is not being worked, or 3) where an invention relates to food or medicine.[297] These three provisions are derived from the prevalent international conventions and treaties as mentioned above.

Not exceptionally, compulsory licensing was provided in the Patent Law of China since the law was first enacted in 1984 and was retained with certain revisions through the three amendments of the law in 1992, 2000 and 2008. In the latest Patent Law of China implemented from 1 October 2009, there are altogether 11 Articles provided in the compulsory licensing section, compared to 8 Articles in the previous version. Generally, in the latest Patent Law of China, the circumstances under which compulsory licensing may be granted are basically the same as the three prevalent types as mentioned above. The new Articles or amendments adopted in the third amendments of the Patent Law of China regarding compulsory licensing are to incorporate more specific principles required by TRIPs. For example, the new Article 57 (amended based on the previous Article 54) specifies that the amount of royalties regarding compulsory licensing (if granted) should refer to the relevant provisions provided in those international treaties or conventions of which China is a member.[298] In addition, the new Article 50 regarding the compulsory licensing of patented medicine for the purpose of public health is also newly added so the compulsory licensing regime in China is more in line with international conventions. This paper will not elaborate on compulsory

[296] A dependent patent is one that cannot be used without infringing an earlier, existing patent. See Joseph A. Yosick, Compulsory Patent Licensing for Efficient Use of Inventions, University of Illinois Law Review, 2001, at 1287.

[297] See Gianna Julian-Arnold, International Compulsory Licensing: The Rationales and the Reality, 33 IDEA: The Journal of Law and Technology, 1993, at 349-350.

[298] See Article 57 of the Patent Law of China.

licensing with regards to a dependent patent being blocked or a patent not being work or a patent relating to food or medicine since those situations are not relevant to the subject of this paper. In other words, the behavior of refusing to license or charging unreasonably high royalties of an essential licence in a technical standard falls in none of the three prevalent categories where compulsory licensing may usually be granted as mentioned above.

III.2.3.2 Applicability of Compulsory Licensing Provisions in the Patent Law of China

One of the noteworthy new provisions introduced to the Patent Law of China in its latest amendment is sub-section (2) of Article 48, which provides that when the exercise of patent right is determined pursuant to relevant laws to be a monopolistic activity, compulsory licensing may be granted to eliminate or reduce the adverse effects caused to market competition by such activity. [299] Furthermore, the newly added Article 52 provides that the implementation of compulsory licensing concerning inventions involving semiconductor technologies is limited to public interest purpose or subject to the abovementioned Article 48 (2). [300] That means, if a semiconductor technology-related patent is in subject of compulsory licensing, the compulsory licensing may only be implemented when such implementation is for public interest purpose or to remedy an adverse anti-competitive practice. Both of these two new provisions are introduced in compliance with Article 31 of TRIPs which sets out the restrictions on grant of compulsory licensing.[301] The restriction of "public interest purpose" or "public non-commercial use"

[299] See Article 48 (2) of the Patent Law of China.
[300] See Article 52 of the Patent Law of China.
[301] For example, Article 31 (c) of TRIPs provides in relation to use of the subject matter of a patent without the authorization of the right holder that "……in the case of semi-conductor technology shall only be for public non-commercial use or to remedy a practice determined after judicial or administrative process to be anti-competitive."

appearing in the abovementioned Article 52 of Patent Law of China or Article 31(c) of TRIPs is not applicable to the subject matter of this paper since it virtually refers to extreme circumstances such as national disasters, public health emergencies, etc. Therefore, the only compulsory licensing provision in the Patent Law of China that may be applicable to the subject matter of this paper, namely, a patent holder's refusal of licensing his essential licence or charge of unreasonably high licensing royalties in a technical standard, is the new Article 48 (2), that is, to grant compulsory licensing as a remedy to anti-competitive patent exercises. Such provision or the spirit of it is also commonly accepted in many other jurisdictions.[302]

The reason for the latest Patent Law of China to incorporate this new Article 48 (2) after its third amendment is because the Antimonopoly Law of China has just came into effect from 1 August 2008. Prior to this date, there is no relevant law in China that can be applied in deciding what kind of activities would constitute a 'monopoly' and how to determine to what extent is the market competition aversely affected. After the promulgation of the Antimonopoly Law of China, the Patent Law of China therefore introduces such a provision in accordance with international practice that compulsory licensing may be granted as a remedy of antimonopoly violations.

This Article 48 (2) of the Patent Law of China or its equivalent provisions in other countries' patent laws (where applicable) is not a standalone provision per se therefore cannot be applied independently. For compulsory licensing to be granted pursuant to this Article 48 (2), one should always apply the

[302] See also §48A(1)(b)(ii), Patents Act of 1977 (as amended), UK, which provides that compulsory licensing may be ordered if the refusal to grant a patent license unfairly prejudices "the establishment or development of commercial or industrial activities in the United Kingdom."

antimonopoly law first to determine whether the exercise of patent rights constitutes a 'monopoly' that affects market competition adversely. The antimonopoly law in China and how it is applied when deciding whether refusal of licensing essential patents or charging unreasonably high royalties in technical standardization constitutes a breach of antimonopoly law are discussed in Chapter III.3. Theoretically speaking, as long as the exercise of patent rights is considered by analyzing antimonopoly law to constitute a prohibited "monopoly" which adversely affects market competition and needs to be sanctioned under antimonopoly law, compulsory licensing can be granted as a remedy of such antimonopoly violation.

What needs to be born in mind and also the same reason why I use "theoretically" in the last sentence of the above paragraph is that in practice, compulsory licensing was granted very rarely. In China, there is no compulsory licensing case at all even though the compulsory licensing provisions in its patent law have been in existence for over twenty-five years. In the US, compulsory licensing has occasionally been implemented through judicial action motivated by a concern for the public welfare.[303] In the US case Image Technical Services, Inc. v. Eastman Kodak Co., [304] the court had found "no reported case in which a court has imposed antitrust liability for a unilateral refusal to sell or license a patent or copyright.", which shows that compulsory licensing was rarely implemented even as an antitrust violation remedy in practice.

Such a gap between theoretical provisions and real life practices with respect to compulsory licensing is derived from the long lasting opposing opinion that

[303] See supra note 297, at 355.
[304] See 125 F.3d 1195 (9th Cir. 1997).

compulsory licensing would diminish the purpose of the patent system by reducing inventors' incentive to develop new technologies and encouraging inventors to keep inventions secret.[305] Take the US patent system for example, it has generally been hostile toward the practice of compulsory licensing and the absolute right of the patent owner to prevent others from using his invention is statutorily protected.[306] Even though courts in the US have suggested compulsory licensing be applied to prevent a use of the patent right that is against public policy, in practice it has only been limited to be used as a remedy for antitrust violations.[307] A patent as a legally justified monopoly grants exclusive rights to its holder so he can recoup his intellectual investments from exploring the invention he created. Such incentive created by patent rights is the ultimate drive for promotion of innovation and technology. In this regard, compulsory licensing which is against the very nature of the exclusivity of a patent and "strikes at the very foundation of the patent system"[308], although widely adopted in various patent systems in the world, was applied very cautiously in practice. Unless absolutely necessary and in absence of fraudulent patent, compulsory licensing is inclined to be regarded as a theoretical safeguard that can only be granted in practice under extreme situations such as national defense, public health or emergencies.

Technical standardization discussed in this paper has nothing to do with national defense or public health for most occasions. It is not very difficult to foresee that there still won't be many compulsory licensing cases even after the latest Patent Law of China has recognised compulsory licensing as a

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305 See Leroy Whitaker, Compulsory Licensing -Another Nail in the Coffin, 2 Am. Pat. L. Ass'n Q.J., 1974, at 155, 161.

306 See supra note 296, at 1277. See also 35 U.S.C. § 271(d)(4) (1994).

307 Id. See also 203 F.3d 1322 (Fed. Cir. 2000), at 1327.

308 See Staff of Subcomm. on Patents, Trademark & Copyrights, Senate Comm. on the Judiciary, 85th Cong., Compulsory Licensing of Patents--A Legislative History (Comm. Print 1958) , at 9.

lawful remedy of antimonopoly breach. Because currently in China, the promotion of technological advancements is still the foremost priority of Chinese patent laws and the least situation the Chinese government would want to see is that compulsory licensing is inappropriately applied that the incentive to invent is discouraged in China. Even if compulsory licensing would be implemented in China as a remedy of antimonopoly violations, specifically in technical standardization discussed in this paper where there is a refusal of licensing of essential patents or the patent holder charges unreasonably high royalties impairing the fair market competition or significantly affecting public interest, it is advisable that such licensing refers to the RAND licensing terms as discussed in Chapter II.2.3.3. The key point is to ensure that compulsory licensing is granted only when it is truly necessary to promote the public interest, while not significantly reducing the incentive to develop new technologies.[309]

III.3 The Application of Antimonopoly Law in Standardization

The law mainly dealing with market competition is differently named in different jurisdictions. The US call it 'antitrust law', which is more commonly known as 'competition law' in Europe and many other countries around the world. There are also some civil law countries that call it 'antimonopoly law', such as Japan and China. Despite different callings and different inclinations of regulatory objectives, these laws are mostly the same in nature. Therefore, I will use 'antitrust law', 'competition law' and 'antimonopoly law' interchangeably in the following discussions. Unless referred to a particular

[309] See supra note 296, at 1300.

jurisdiction, each of the three terms means a law system specially designed to protect the integrity of market competition.

As regards standardization, the antitrust enforcement agencies have shown considerable interest in the activities of SSOs and their participants because of the recognized procompetitive benefits that standard-setting can provide as well as the potential for its misuse in connection with exclusionary and collusive practices that have resulted in antitrust liability.[310] There are occasional circumstances in which SSOs may act as a front for a cartel.[311] After all, an SSO assembles a group of competitors in certain industries and functions as a platform for all these competitors to negotiate future cooperation and sometimes price arrangements, which are all very sensitive topics to antitrust authorities. However, it is very rare today that SSOs are merely set up for collusion purposes. SSOs specifically aiming at naked price-fixing or other anticompetitive conducts barely exist. As long as SSOs stick to the selection of 'essential patents' when formulating their technical standards, it is relatively safe to say that an SSO as a whole and the cooperation involved in the standardization won't arouse antitrust attention.

More commonly, the anticompetitive patent issues arise in standardization in the form of monopolistic patent exploitations, which tend to attract more attentions from antitrust authorities. Ambitious patentees usually attempt to obtain competitive advantages in the relevant market by misleading SSOs to adopt standards covered by their patents. They either intentionally conceal their proprietary technologies and refuse to license their patents to standard

[310] See Antitrust Division Endorses Ex Ante Disclosure of Maximum Royalty Rate and Licensing Terms in Context of Standard Setting, Client Memorandum of Willkie Farr& Gallagher LLP.

[311] See supra note 24, at 1969.

adopters or manage to incorporate their patents in the standard and charge unreasonably high royalties. Ultimately, these patentees try to achieve market monopolization or at least high profits they could never gain without the platform of standardization. As previously discussed, we could apply the contract theory to enforce the SSO IP policies or the doctrine of patent misuse or compulsory licensing to regulate the exploitation of patents in standardization. Even if neither the theory of contract nor the doctrine of patent misuse is applicable, as long as free and fair competition is negatively affected, we could rely on competition law to control the exercise of patent rights within a procompetitive boundary.

III.3.1 A Brief Introduction of Antimonopoly Law of China

On 30 August 2007, after thirteen years on the drawing board, the Antimonopoly Law of China was adopted at the 29th session of the tenth National People's Congress of China. Although it aroused considerable concerns on its reasonableness and applicability, the Antimonopoly Law still constitutes a significant milestone in competition legislation in China. The so-called 'Economic Constitution' of China contains many features that are basically consistent with international norms, including provisions that create a modern merger review regime, proscribe abuses of a dominant position, and prohibit joint conducts such as price fixing and market allocation.[312] That means China has finally owned her powerful weapon to achieve the purpose of "preventing and restraining monopolistic conducts, protecting fair competition in the market, enhancing economic efficiency, safeguarding the interests of consumers and social public interest, promoting the healthy

[312] See H. Stephen Harris, Jr. The Making of An Antitrust Law: the Pending Anti-Monopoly Law of the People's Republic of China, 7 Chicago Journal of International Law, 2006, at 172.

development of the socialist market economy".[313] Among the altogether fifty-seven articles, the one article addressing the relationship between the Antimonopoly Law and IPRs has received more attention from both domestic and foreign innovators than any other provisions. In Article 55, it is stipulated that "this law is not applicable for undertakings exercise intellectual property rights according to laws, administrative regulations related to intellectual property rights; however, this law is applicable for undertakings abuse intellectual property rights to eliminate or restrict competition." [314] On the one hand, it means China officially stated her attitude towards the interaction between antimonopoly law and IP law. That is, the exercise of IP rights granted by IP law is generally excluded from the scrutiny of antimonopoly law unless such an exercise hurts competition. On the other hand, however, this article is too general to provide any specific norms determining what constitute 'abuse' of IP rights and to what extent should competition be eliminated or restricted in order to apply the Antimonopoly Law. Neither is there any specific rule regarding the particularity of the exercise of IP rights in the way it affects competition, compared to other ordinary conducts. Therefore, when it comes to exercises of patent rights in standardization, we need to refer to other general articles besides Article 55 of the Antimonopoly Law to decide whether the exploitation of patent rights in standardization has negatively affected competition thus should be prohibited or not. Specifically speaking, whether a patentee's nondisclosure of his essential patent or refusal to license should be regulated by Antimonopoly law depends on whether the patentee's behaviors eliminate or restrict competition.

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313 See Antimonopoly Law of China, Article 1.

314 An 'undertaking' in this law refers to a legal person, other organization or natural person that engages in businesses of commodities (hereinafter "commodities" include services). See Article 12 of the Antimonopoly Law of China.

The Antimonopoly Law of China condemns three categories of monopolistic conducts: 1) monopolistic agreements among undertakings; 2) abuse of dominant market positions by undertakings and 3) concentration of undertakings that eliminates or restricts competition or might be eliminating or restricting competition.[315] Such an arrangement shares great similarities with other jurisdictions' competition policies in spite of distinctive wording. For example, the US antitrust law prohibits agreements in restraint of trade; monopolization or attempted monopolization and anticompetitive mergers.[316] The EU competition law also mainly regulates cartels or collusions; abuse of dominant positions and mergers, acquisitions and joint ventures.[317]

As for a patentee's exercise of his exclusive patent rights in standardization mainly discussed in this paper, it is a unilateral behavior which rules out the application of the Antimonopoly Law in the aspects of 'agreements' and 'concentration'. A patentee's nondisclosure of his essential patent or his refusal to license his patent to other standard adopters does not constitute a 'monopolistic agreement', nor does it suffices a 'concentration of undertakings'. Therefore, among the three kinds of monopolistic conducts expressly stipulated by the Antimonopoly law of China, the second one—the abuse of dominant market positions—is comparatively the most pertinent rule for regulating patent exploitations by manipulative patentees in standardization.

315 See Article 3 of the Antimonopoly Law of China.
316 See the Sherman Act, the Clayton Act and the 1997 Merger Guidelines of the US.
317 See Articles 81 & 82 of the Treaty of the European Community and the Merger Regulation (Council Regulation 139/2004 EC).

III.3.2 Condemning Monopolistic Exercises of Patent Rights as 'Abuse of A Dominant Market Position'

III.3.2.1 The Identification of 'Dominant Market Positions' by Chinese Antimonopoly Law

A 'dominant market position' in Antimonopoly Law of China refers to the ability for one undertaking or several undertakings as a whole to control the price, quantity or other trading conditions of products in the relevant market, or to hinder or affect other undertakings in entering into the relevant market.[318] This definition generally tracks the EC competition law in the assessment of unilateral conducts and collective dominance.[319] The European Court of Justice ("ECJ") defined a dominant position under Article 82 of the EC Treaty as "…a position of economic strength enjoyed by an undertaking which enables it to hinder the maintenance of effective competition of the relevant market by allowing it to behave to an appreciable extent independently of its competitors and customers and ultimately of consumers."[320] The parallel concept in the US antitrust law is 'market power', which is described as "the ability of a single seller to raise price and restrict output, for reduced output is the almost inevitable result of higher prices."[321] In China, undertakings are forbidden to abuse dominant market positions to: 1) sell commodities at unfairly high prices or buy commodities at unfairly low prices;…3) refuse to trade with counterparties without legitimate reasons;…5) tie products or require unreasonable conditions for trading without legitimate

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318 See Article 17 of the Antimonopoly Law of China.
319 See supra note 312, at 195.
320 Id.
See also Michelin v Commission, Case 322/81, 1983 ECR 3641, 3503, 9 November 1983; United Brands v Commission, Case 27/76,1978 ECR 207, 277, 14 February 1978; Hoffman-La Roche v Commission, Case 85/76, 1979 ECR 461, 520, 13 February 1979.
321 See Fortner Enters, Inc v US Steel Corp, 394 US 495, 503 (1969).

reasons; 6) apply dissimilar prices or other transaction terms to equivalent counterparties; 7) other conduct identified as abuse of a dominant position by antimonopoly authorities.[322] A patentee's refusal to license his essential patent in standardization would suffice 'refuse to trade' (the above 3)). Moreover, a patentee's failure to license his patent on RAND terms might suffice 'require unreasonable conditions for trading' or 'apply dissimilar terms to equivalent counterparties' (the above 5) and 6)). As for a patentee's nondisclosure of his essential patent, he conceals his patent in the first place so that he could manipulate his licensing rights at a later stage, such as refusal to license or license on unreasonable or discriminatory terms. Such a nondisclosure could be covered under 'other conduct identified as abuse of a dominant position by antimonopoly authorities' (the above 7)). When we try to apply the Antimonopoly law of China to decide whether a patentee's exercise of his patent rights in standardization should be prohibited or not, we need to determine whether such an exercise constitutes 'abuse of dominant market positions'. Furthermore, we need to determine whether the patentee is in a 'dominant market position' in the first place.

When determining if an undertaking is in a dominant market position, the Chinese Antimonopoly Law would take the following factors into consideration: 1) market share and competition situation in the relevant market; 2) ability to control sales or purchase market; 3) financial status and technical conditions of the undertaking; 4) the degree of dependence of other undertakings in trading with the undertaking; 5) the difficulty of entering into the relevant market by other undertakings and 6) other factors related to find a dominant market position.[323]

[322] See Article 17 of the Antimonopoly Law of China.
[323] See Article 18 of the Antimonopoly Law of China.

Among all factors bearing on the ability to control price or output, market share is widely acknowledged in different jurisdictions as one of the most important one. The EC competition law recognizes that "the existence of a dominant position may derive from several factors which, taken separately, are not necessarily determinative but among these factors a highly important one is the existence of very large market share."[324] Under the US antitrust law, the defendant's market share is the conventional proxy and usually the starting point for assessing the existence of market power.[325] In principle, unilateral conducts give rise to competitive concerns only when such conducts are carried out by undertakings with a significant degree of market power or control. The theory goes that if there are substitutes on the market, no company can raise prices substantially above competitive level without losing market shares to its rivals.[326] A monopolist with market power or an undertaking in a dominant position usually has the power over prices and can engage in exclusionary trading thus excluding free competition.[327] A low market share virtually precludes a finding of market power, whereas a high market share indicates the possibility that market power exists.[328] Market shares in the range of 70%~90% are sufficient to establish a prima facie case of monopoly power, provided that they are held over a significant period of time.[329]

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[324] See Hoffman-La Roche v Commission, Case 85/76, 1979 ECR 461, 520, 13 February 1979.

[325] See supra note 312, at 195.

[326] See Katarzyna A. Czapracka, Where Antitrust Ends and IP Begins- On the Roots of the Transatlantic Clashes, 9 Yale J. L. & Tech. 50 (2007).

[327] The US Supreme Court defined 'monopoly power' as 'the power to raise prices and exclude competition'. See Eastman Kodak Co. v. Image Technical Services, Inc., 504 U.S. 451, 481 (1992).

[328] See American Bar Association ("ABA") Section of Antitrust Law, Antitrust Law Developments 68 (5th ed. 2002).

[329] See United States v. Aluminum Co. of America, 148 F.2d 416, 424 (2d. Cir. 1945) (held that a market share of 90% was "enough to constitute a monopoly", and that it was "doubtful whether 60 or 64 percent would be enough and certainly 33 percent is not."). See also Microsoft, 253 F.3d at 54-55.

The Antimonopoly Law of China expressly presumes a dominant market position based on market shares.[330] It provides that undertakings could directly be assumed to have a dominant market position if: 1) the market share of one undertaking in the relevant market accounts for 1/2 or above; 2) the joint market share of two undertakings as a whole in the relevant market accounts for 2/3 or above or 3) the joint market share of three undertakings as a whole in the relevant market accounts for 3/4 or above. Consequently, if an undertaking's market share in the relevant market falls within the aforementioned scopes, unless there is enough evidence to prove that the undertaking does not occupy a dominant market position[331], the refusal to trade or discriminatory transaction terms of the undertaking will be condemned to be abuse of a dominant market position. In the context of standardization, if a patentee is successful enough to possess certain percentage of market share and dominants the relevant market, it could be expected that his exclusive exploitations of his patent right would be strictly restricted by the Antimonopoly law of China. This must be very upsetting for those undertakings which have attained substantial market shares through their successful and legitimate business strategies.

The presumption of 'dominant market positions' by Chinese Antimonopoly Law is criticized by commentators for its inconsistency with international norms.[332] The percentages stipulated in Article 19 determining dominant positions preclude considerations of other factors that may justify an undertaking's remarkable market share through its legal and reasonable

[330] See Article 19 of the Antimonopoly Law of China.
[331] See Article 19 of the Antimonopoly Law of China. It is a reversion of burden of proof, which requires that the undertaking in question is obligated to provide evidence to prove that it doesn't occupy a dominant market position.
[332] See supra note 312, at 198.

effort. It is obviously incompatible with the universally acceptable theory that antimonopoly law is to protect competition instead of competitors.[333] Take the US antitrust law for example, it has been admitted that the possession of market power, or dominance, does not itself constitute an abuse.[334] In a speech delivered before an international symposium on China's draft Antimonopoly Law, the General Counsel of the US FTC once pointed out two key principles of US law on monopolization, which should be highlighted for China's consideration of 'abuse of dominant market positions'.[335] First, it was stated that the US antitrust law "does not condemn the mere possession of monopoly power, but punishes only misuse that results in a substantial injury to competition… Innovation, economic growth, and vigorous competition would be stifled if the competition law were to punish successful market participants who achieve a dominant or monopoly position."[336] Second, in the sense that a more efficient firm may carries out competitive conduct which "frequently looks like exclusionary conduct" "at the expense of its less-efficient competitors" without harming competition, "even firms with monopoly power are permitted to compete aggressively on the merits".[337] In other words, less efficient businesses are not protected from "legitimate, vigorous competition, even where a firm holds a dominant or monopoly position." The competition law only prohibits "a firm with monopoly power from engaging conduct that has no legitimate business justification other than to control prices or exclude

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333 Id. at 199.
See, e.g., KMB Warehouse Distributions, Inc v Walker Mfg Co, 61 F3d 123, 129 (2d Cir 1995).

334 See supra note 312, at 199.

335 See William Blumenthal, Presentation to the International Symposium on the Draft Anti-monopoly Law of the People's Republic of China, at:http://www.ftc.gov/speeches/blumenthal/20050523SCLAOFinal.pdf. The International Symposium was organized by the Legislative Affairs Office of the State Council, together with the Ministry of Commerce and the State Administration for Industry and Commerce of China, in Beijing on May, 2005.

336 Id.

337 Id.

competition" because such kind of conduct injures competition.[338] From the above speech, we may note that a certain degree of market share or market power is just a helpful and direct reference in determining a 'dominant market position' or 'monopolization'. There are other important factors that may indicate a 'dominant market position', for example, the difficulty for others to enter into the relevant market ("barriers to entry") and other determinants stipulated in Article 18 of the Antimonopoly Law of China. The justification of prohibiting 'abuse of dominant market positions' lies in the fact that the abusive conducts may pose harm to competition, not that they simply achieve dominance or monopoly in the relevant market.

III.3.2.2 The Relationship Between IP Law and Competition Law – Discussions and Analysis Mainly from the US

The identification of 'dominant market positions' by antimonopoly law would be more complicated when IP rights are involved. As mention previously, the newly enacted Antimonopoly Law of China is too general to specify its appropriate relationship with IP law. [339] The following discussions on said relationship, therefore, are mainly based on other countries' experience and analysis. Although most of the ideas below are from US scholars, it is stressed that those conclusions drawn from years of sophisticated discussions are also applicable in context of Antimonopoly Law of China.

The relationship between competition law and IP law has proved to be a subject of perpetual controversy since the coexistence of the two legal

[338] Id.
[339] See pages 126 and 127of this paper.

systems. The complex interaction arises out of the seemingly inherent conflicts between the two laws, regardless of different jurisdictions. Intellectual creations, which are called 'public goods' by economists, are much easier and cheaper to copy than they are to produce in the first place.[340] Without certain extent of exclusive control over the creations, few people will have the interest to innovate. Therefore, IP rights thus are a 'solution' to the 'public goods' problem because they privatize the public goods, giving potential inventors an incentive to engage in research and development.[341] By granting inventors the right to exclude others from using their ideas, IP laws necessarily limit the diffusion of those ideas and prevents people from free-riding on them. [342] In economic terms, IP rights prevent competition in the sale of the particular invention covered by the IP right, and therefore may allow the IP owner to raise the price of that invention above the marginal cost of reproducing it.[343] In order for IP law to succeed in giving authors and inventors an incentive to create, the law must give them at least some power over price, though not necessarily monopoly control.[344] On the other hand, however, competition law is specially designed to ensure that markets are not unfairly dominated by a single or a few firms and potential competitors do not collude together to avoid free competition, which usually best achieves efficient allocation of resources. The economic basis for competition law is that firms in competition will produce more output at a lower price than monopolists.[345] Monopolists not only take money away from consumers by raising prices, but they impose a 'deadweight loss' on society by reducing their output below the level which consumers would be willing to

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340 See supra note 24, at 1892.
341 Id.
342 See Mark A. Lemley, A New Balance Between IP and Antitrust, 13 Southwestern Journal of Law & Trade in the Americas, 2007, at 245.
343 Id.
344 Id.
345 See supra note 24, at 1932.

purchase at a competitive price.[346] In the sense that IP law may enable the holders of exclusive rights to charge monopoly prices or limit competition, IP rights appear to run counter to free market competition protected by competition law.[347] On several occasions in jurisdictions having both IP and competition law, scholars and courts historically considered the two laws to be in conflict. For example, in US v Westinghouse Elec. Corp., it was contended that "there is an obvious tension between the patent laws and antitrust laws. One body of law creates and protects monopoly power while the other seeks to proscribe it." [348]

Nowadays, people have realized that competition law and IP law actually can be reconciled in the sense that they share common goals in the long run. It was widely accepted that both antitrust law and patent law have a common central economic goal of maximizing consumer welfare, though they try to achieve this in different and seemingly conflicting ways. [349] The limited monopoly granted by IP laws in exchange of efficiencies and incentives to innovate is quite different from the monopoly that antitrust law is interested in. Competition law and IP law are recognized to be complementary rather than conflicting with each other in encouraging innovation and promoting an efficient marketplace and dynamic competition.[350]

Furthermore, IP rights do not necessarily establish market power or dominance. The Antitrust Guidelines for the Licensing of Intellectual Property

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346 Id.

347 Id.

348 See U.S. v. Westinghouse Elec. Corp., 648 F.2d 642, 646 (9th Cir. 1981). Further back in history, the principle that patents (or indeed all IP rights) were 'monopolies' of which antitrust law should be especially wary was taken for granted. See, e.g., Henry v. A.B. Dick Co., 224 U.S. 1, 27 (1912).

349 See Ward Bowman Jr., Patent and Antitrust Law: A Legal and Economic Appraisal, University of Chicago Press, 1973.

350 See e.g., Atari Games Corp. v. Nintendo of Am., 897 F.2d 1572, 1576 (Fed. Cir. 1990) (it was held that patent and antitrust law "are actually complementary, as both are aimed at encouraging innovation, industry and competition.").

("AGLIP") issued in 1995 by the US antitrust agencies proclaimed that they would not presume that IP rights confer market power and that such rights are essentially comparable to any other form of property.[351] The European Court of Justice adopts the same approach. It was once held that the exercise of exclusive distribution rights under national legislation does not automatically mean to occupy a dominant position; there must be some further showing such as a right holder's power to impede the maintenance of effective competition over a considerable part of the relevant market.[352] Similarly, the mere ownership of IP rights, without more, does not establish dominance.[353]

The hands-on conclusion of the complementary relationship between IP and competition law as well as the recognition that IP rights do not necessarily confer market power provide valuable guidance to Chinese Antimonopoly Law in identifying 'abuse of dominant market positions'.

III.3.2.3 Determining Whether A Patentee's Manipulative Exploitation of His Patent Right in Standardization Constitutes 'Abuse of Dominant Market Positions' in Context of Chinese Antimonopoly Law

Since IP rights do not necessarily establish dominance, we should consider other factors determining whether the patentee participating in standardization has occupied a dominant position in the relevant market, and if so, would his manipulative exercise of his patent right constitute an 'abuse'.

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[351] See the US DOJ & FTC, Antitrust Guidelines for the Licensing of Intellectual Property § 2.2 (1995), at: http://www.usdoj.gov/atr/public/guidelines/0558.pdf.

[352] See Deutsche Grammophon Gesellschaft mbH v. Metro-SB-GroSSmarkte GmbH & Co. KG, 1971 E.C.R. 487.

[353] See Radio Telefis Eireann (RTE) and Independent Television Publications Ltd. (ITP) v. Commission of the European Communities, 1995 E.C.R. I-743, at 46.

In the sense that a 'dominant market position' usually refers to the ability to control price or build up barriers to entry,[354] chances for an essential patent holder in standardization to occupy a dominant market position are very high taking into consideration of the characteristics of standardization. The particularity of standardization lies in the fact that it usually assembles a series of technologies, proprietary or nonproprietary ones, into one technical specification of a final standard. Those originally separate, unrelated patents thus are bundled together as a whole for industrial participants to implement. Most of the time, the patents, especially the essential ones covering the final standard are inseparable in achieving the designed function of the standard. Therefore, one patentee's exercise of his exclusive patent right in standardization is no longer his individual freedom since his single refusal to license may deny the access of potential licensees to use the final standard including many other technologies. In this regard, when analyzing the dominant extent or the market power of a single patent which covers a standard, we may consider applying a stricter set of rules taking into consideration of the amplified market power a standard could confer to a patent.

If a patentee's patented technology takes up a substantial market share in the relevant market, for example, most of the downstream manufacturers need to apply his patent to make a certain product, it would be relatively easy to determine whether he has abused his dominant market position. But for standardization, the technical specifications of the final standards sometimes include hundreds even thousands of essential patents, none of which alone takes up considerable market share in the relevant market. In such a case,

[354] See Article 17 of the Antimonopoly Law of China.

when analyzing the factors that may infer dominance, we may not merely consider the market power of the patent itself. We cannot preclude the analysis of 'dominant market position' based on the fact that a single patent's market share is comparably minor in the relevant market. Instead, we should consider the dominant extent of the whole standard which includes not only the patent in question but also many other patents held by different owners. Take a patentee's refusal to license for example. When exercised individually, the exclusive licensing rights granted by patent laws generally confer the patent holders the freedom to "choose their business partners".[355] These certain extent of exclusivity of IP rights is justified as a tradeoff in exchange of incentive to innovate. When it comes to standardization, however, a patentee's refusal to license his essential patent actually denies not only the access of using his patent but also the accesses of other technologies integrated in the whole standard. In this regard, the 'relevant market' of a patent which is essential to a standard should be the market of the standard as a whole. That is, when deciding the market share or the market power of an essential patent in a standard, the relevant market should be defined in the sense that whether there are other substitute technologies in the market to compete with the subject standard in realizing similar technological functions (e.g., DVD standard and other technologies which are applicable in producing DVDs). It is stressed that patents involved in the final standard are explored together, therefore, competition takes place in the market of the standard instead of the market of the patent itself.

Sometimes, industrial participants have to adopt standards in order to be competitive in the relevant technical competition. That means standard adopters do not have a choice to refuse the unreasonable licensing fee

[355] See Van Bael & Bellis, Competition Law § 8.8 (1) at 940.

charged by one patentee because they cannot afford to lose the opportunity to implement the standard as a whole. Interested standard adopters have to make sacrifices of paying unreasonable royalties in exchange of the access to other technologies in a standard. This factor would further enable an ambitious patent holder to manipulate his essential patent to control the price (licensing royalties) or set barriers to entry (denying others' access by refusing to license) in the relevant technological market. That is also why ambitious patentees by all means manage to capture the standard by their essential patents. Because they can achieve much more profits using the platform of standardization than simply exercise their patent rights when potential licensees have substitute technologies to choose from once they find the royalties at issue are unreasonable. Obviously, a patent holder shouldn't be granted such a powerful exclusive right, which unreasonably exceeds the legally justified boundary.

In addition to market share, other factors such as competition situation, ability to control the sales market and set barriers to entry, degree of dependence of other competitors, etc.,[356] should all be considered in context of the whole standard when analyzing the dominant extent of a single essential patent. Even if a patentee's individual market share falls within the safe harbor of less than 1/10 of the relevant market,[357] it is still possible that the patentee occupies a dominant market position as long as the standard covered by his essential patent is dominant in the relevant market. In like manner, if a standard as an integration of many patents doesn't even possess substantial

[356] See Article 18 of the Antimonopoly Law of China, which provides several factors to be taken into consideration when finding a dominant market position.

[357] See Article 19 of the Antimonopoly Law of China. It provides that "Undertakings with a market share of less than 1/10 will not be deemed as occupying a dominant market position even if they fall within the scope of the second or the third item stipulated by Article 19."

market power in its relevant market, the individual patents involved in the standard surely won't be condemned to be in dominant market positions.

Identifying dominance is just a prerequisite. When we try to regulate a patentee's manipulative exercise of his patent right in standardization applying the antimonopoly law, we have to further prove that the identified dominance has been abused. Article 17 of the Antimonopoly Law of China provides some typical examples of conducts that constitute an 'abuse', for example, predatory pricing and refusal to trade without legitimate reasons, tying, differentiated treatment, etc.[358] These listed conducts are by no means exclusive. Due to the limitation of written law, it is impossible for an article to enumerate all abusive conducts. That's why the final subpart of Article 17 provides "other conduct identified as abuse of a dominant position by antimonopoly authorities". However, in absence of any assurances on what exactly might constitute an 'abuse' or how such a conclusion may be arrived, [359] it is extremely difficult for this vague provision to render meaningful guidance. In this sense, it is advisable to clarify the meaning of 'abuse' in the future Implementing Regulations of the Antimonopoly Law of China. Meanwhile, even if the alleged conduct is not expressly identified in the list of abusive conducts, we could analyze it on a 'case by case' basis. The key point of whether there is an abuse of a dominant market position depends on whether the alleged conduct ultimately eliminates or restricts competition. The modern economics-based and effects-based analysis could be conducted to see if free and fair competition is harmed by the alleged conduct. With regard to standardization and a patentee's manipulative exercise of his patent right, once dominance is proved to exist, the rest of the investigation would be to

[358] See Article 17 of the Antimonopoly Law of China.
[359] See supra note 312, at 210.

what extent is the relevant technological competition affected and whether the consumers' welfare is substantially reduced by the patentee's refusal to license or charge of unreasonably high royalties.

Some terms used in Article 17 even in the whole passage of the Antimonopoly Law of China, such as 'unfair', 'unreasonable' and 'legitimate reasons', are highly subjective, which suggests that there must be further specific implementing rules to clarify the vagueness and uncertainty. We might consider referring to international norms and other jurisdictions' experience, for example, defining 'legitimate reasons' in a manner generally consistent with the EC's use of 'objectively justified' grounds.[360] Even if it is impossible to literally define what is 'unreasonable' or 'unfair', we still could rely on courts to fulfill the task of clarified interpretation, especially in the context of determining what are reasonable royalties charged by patentees holding essential patents to a standard. Courts are considered to have accumulated a fair bit of experience in determining reasonable royalties in the patent aspect because they have done so in a large number of patent damages cases.[361] In a US case, Georgia-Pacific Corp. v. U.S. Plywood, Inc., a multi-factor test was applied to determine the appropriate patent royalty, which could provide valuable reference for Chinese patent laws with no official stipulations on reasonable patent royalties. It was stated in the US case that the following factors (not exclusive) are pertinent to determine a reasonable royalty for a patent license: the royalties received by the patentee for the licensing of the patent, proving or tending to prove an established royalty; the rates paid by the licensee for the use of other patents comparable to the patent; the nature and scope of the license, as exclusive or non-

[360] See supra note 312, at 204.
[361] See supra note 24, at 1966.

exclusive or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold; the duration of the patent and the term of the license; the established profitability of the product made under the patent, its commercial success, and its current popularity and so on.[362] When it comes to patent licensing regarding a technical standard, courts should take the particularity of standardization into consideration and put extra emphasis on the requirement that the royalty be reasonable in both commercial and technological context.[363] For example, a patent royalty set should be one that is reasonable ex ante, before the standard is selected, not one that might be obtainable after the industry has been locked into the patented standard.[364] A reasonable royalty should also consider the available alternatives at the time the decision was made to adopt the standard, not the value that an IP owner might be able to extort by virtue of the SSO's adoption of the standard.[365] These suggestions, although provided by American scholars, are also applicable in Chinese practice.

III.3.2.4 The Proposed Application of Antimonopoly Law of China in Patent Disclosure in Standardization – Lessons from the US

Apart from leveraging patent licensing rights in standardization, another notorious manipulative exploitation of patent rights is for a patentee to intentionally conceal his essential patent thus capturing the final standard by

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362 See Georgia-Pacific Corp. v. U.S. Plywood, Inc., 318 F. Supp.1120 (1970).
363 See supra note 24, at 1967.
364 See Rochelle Cooper Dreyfuss, Diane Leenheer Zimmerman, Harry First (editors), Expanding the Boundaries of Intellectual Property - Innovation Policy for the Knowledge Society, Oxford University Press, at page 96, Carl Shapiro, Setting Compatibility Standards: Cooperation or Collusion? 8 June 2000, at: http://faculty.haas.berkeley.edu/shapiro/standards.pdf.
365 See supra note 24, at 1967.

surprise. By willful failure to disclose his essential patent, the patent holder would mislead the SSO into adopting a standard considered to be free to use, but which in fact is exclusively controlled by certain people. By this way, the patentee could enjoy the competitive advantages the final standard would grant to his essential patent. If there is no clear SSO IP policy, or if the policy doesn't require but just encourage participants to disclose their essential patents, it will be difficult to condemn the willful patentee's nonfulfillment of obligations. The theory of 'patent misuse' seems inapplicable here too, since the patent in question has yet to be used. Moreover, the mere failure to disclose an essential patent could not suffice an 'abuse of a dominant market position' in a strict sense. Unless coupled with the subsequent exercise of licensing rights, the nondisclosure alone is an incomplete 'abuse' since the dominant market position has not been proved to be established. In other words, the manipulative patentee just attempts to achieve a dominant position by hiding his essential patent from the SSO. Does this mean that we could not enforce antimonopoly law merely against the malicious nondisclosure of essential patents in standardization?

In the newly enacted Antimonopoly law of China, there is no stipulation as regards whether behaviors probably leading to monopolization should be prohibited or not. In the US antitrust law, the ancestor of antitrust or competition legislation, the corresponding term is 'attempted monopolization'. According to Section 2 of the Sherman Act, "Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony….". That means the US antitrust law regulates not only monopolization but also attempted monopolization, the latter of which is the perfect attack

against efforts to control the standard-setting process by deliberately failing to disclose the essential patent. Although currently there is no such a term as 'attempted monopolization' in the Antimonopoly Law of China, it is proposed that the same be included in the revised law or in the implementing regulations of the law. The following discussions in relation to 'attempted monopolization' are mainly theories from the US and the proposed application of 'attempted monopolization' in Chinese standardization stays in a theoretical level.

Attempted monopolization in the US generally includes three elements: a specific intent to monopolize; anticompetitive conduct in furtherance of that intent and a dangerous probability of successful monopolization.[366] Of course, market power or a dominant market position is indispensable in proving monopolization, whether attempted or realized one. That means, in the context of standardization, the final standard the patentee attempts to manipulate must have certain extent of influence on the relevant market. If the finally adopted standard has no market power at all, the manipulative conducts to control the final standard thus would not sustain an attempted monopolization.

In the aforementioned cases Dell and Rambus, both of the plaintiffs have similarly alleged that the defendants persuaded the SSOs to adopt their proposed standards by misrepresenting their IP status. [367] This misrepresentation sometimes appears as an omission, such as failing to publicly assert ownership in the standard until after it is adopted, and sometimes appears as an affirmative falsehood such as signing a statement

[366] See supra note 24, at 1928. See also Spectrum Sports v. Mcquillen, 506 U.S. 447, 456 (1993).
[367] See Chapter II.2.1 on pages 46~54.

indicating that the party has no IP rights in the proposed standard.[368] Anyway, the misrepresentation of a patentee on his patent right aims at manipulating the process of standardization in the way that enables him to achieve market power or dominant position he might not have attained in an open competition. Such a competition risk justifies the antitrust scrutiny against the willful nondisclosure of essential patents in the context of standardization.

When proving attempted monopolization by misrepresentation in standardization, it is very important to assure that the adoption of the proprietary standard is necessarily caused by the misrepresentation. In other words, the misrepresentation only affects competition and should be punished under competition law when the SSO would not have adopted the standard in question if it was fully aware of the IP status. If an SSO had no alternative nonproprietary technologies and would have approved the proprietary standard even it had known about the patent right, [369] the future monopolization would be irrelevant with misrepresentation, instead, it is resulted from the patent right and its market power itself. In the sense that fair competition is not affected by anticompetitive conduct, competition law should not interfere alleging attempted monopolization. The reason is because the monopolization would be achieved anyway, with or without misrepresentations. In a word, when condemning a patentee's intentional nondisclosure of patent right in standardization as attempted monopolization, it is necessary to prove that the misrepresentation of the patentee directly causes the SSO to adopt a proprietary standard while it has the option to choose an nonproprietary one if it were fully informed. Besides, the

[368] See supra note 24, at 1928.
[369] See Naughton, Michael C., Wolfram, Richard, The antitrust risks of unilateral conduct in standard setting, in the light of the FTC's case against Rambus Inc., Antitrust Bulletin, 22 September 2004.

misrepresentation would enable the patentee to achieve market power or dominance he would not otherwise have obtained, which unreasonably affects free and fair competition.

Besides market power (or a dangerous probability of its acquisition) and an anticompetitive misrepresentation that helps acquire or maintain the power,[370] another important aspect in proving attempted monopolization is that the patentee's failure to disclose his essential patent in standardization is intentional and not an oversight. If a patentee is not fully aware of his huge patent portfolio thus failing to declare that he owns an essential patent covering the proposed standard, it is no longer justified to enforce competition law and condemn attempted monopolization for there is no willful conduct in an effort to monopolize.[371] Although sometimes a malicious intent to monopolize is difficult to prove, it can still be inferred from the practical conducts of the patentee. For example, in the Rambus case, the district court held that Rambus clearly knew of its disclosure obligations and knowingly abrogated them based on strong evidence and analysis.[372] Moreover, the court identified the intent to mislead from evidence showing Rambus' plan to bring patent infringement suits arising from the SSO—JEDEC.[373] It was contended that:

> *"Rambus, through its executives, sought to patent the technology being discussed at JEDEC so that it could later bring patent infringement suits. Furthermore, e-mails written by Richard Crisp (Rambus' representative in JEDEC) show that, rather than informing*

[370] See supra note 24, at 1933.
[371] Id.
[372] See supra note 128, at 756. For detailed discussion of the Rambus case, see Chapter II.2.1 from page 48.
[373] See supra note 130, at 484.

JEDEC about its issued and pending patents, Rambus intentionally decided to keep these secret."[374]

In the later investigations, through analyzing the factual conducts of Rambus and JEDEC's IP policy, the US FTC also concluded that "Rambus understood that knowledge of its evolving patent position would be material to JEDEC's choices, and avoided disclosure for that very reason."[375] Although the latest judgment of the Rambus case issued by the US Court of Appeals for the District of Columbia Circuit denied FTC's allegation of monopolization[376], it does not mean that all future non-disclosure of patents or misrepresentations in standardization will be precluded from antitrust scrutiny. As long as there is sufficient evidence to show that the non-disclosure or the misrepresentation ultimately assists in achieving monopolization or leads to attempted monopolization, these behaviors are very likely to be prohibited by competition law.

III.3.5 Conclusion

The patent-related issues in standardization, such as 'essential patents', 'patent holdups' in respect of patent disclosure and licensing, are both private problems facing standard adopters and public policy problems.[377] In the private sense, those who are interested in adopting the final standard do not want to be manipulated or overcharged by essential patent holders of the standard. While publicly, the downstream consumers will ultimately pay for the unreasonably high royalties caused by 'patent holdups', if any. The

[374] See supra note 128 at 756.
[375] See supra note 138.
[376] See Chapter II.2.1 on page 53.
[377] See supra note 49, at 603.

market competition will be disturbed by collusive standard-setting or by monopolization through misuse of patent rights in standardization. That is why these patent-related issues are not merely private contracting problems or simply misuses of individual exclusive rights. That is also why it is necessary to apply antimonopoly law in dealing with the patent-related issues, in order to help preserve or repair the affected competition which cannot be effectively protected by either contract or patent laws. Antimonopoly law could be considered as a safety valve in protecting healthy standardization, in the sense that it may be applicable even in the absence of an explicit SSO IP policy or the conduct of patent misuse, as long as free and fair competition is eliminated or restricted during the process of standardization.

Conclusions

Without standardization there wouldn't be a modern economy.[378] Without patented technologies there wouldn't be high-tech interoperability standardization. Patents equipped with technical superiority guarantee the quality of standards and promote technical innovation and competition. Exclusive patent rights, if manipulated by ambitious patentees, would pose serious threats to standardization and to competition in the relevant market. The patent-related issues generally arise in standardization in two major aspects: collusive interactions between more than two patents and monopolistic exploitations of individual patents. Properly addressing these two forms of patent-related issues that arise in the process of standardization is crucial to both technical development and market competition. Through discussions of the previous three chapters as regards patents in

[378] See James Surowiecki, Turn of the Century, Wired, January 2002, at 85.

standardization and the private and public regulations on their exploitations, it is not difficult for us to come to the following conclusions:

A. Including only 'essential patents' in the technical specifications of a standard is a prerequisite of procompetitive standardization

Standardization is acknowledged for its procompetitive benefits such as technical efficiency, convenience and promotion of innovation and competition. However, that does not mean that we should preclude standardization from the examination of competition law. It is necessary that we balance the procompetitive virtues of standardization against the risks that it may facilitate collusion.[379] After all, the process of standard-setting gathering a group of competitors in the relevant market to discuss future cooperation has always been a sensitive topic in the eyes of antitrust authorities. An SSO, as a platform formulating the technical specifications of a standard, may arouse antitrust concerns in the sense that it may act as a cartel with the power of eliminating potential competition in favor of the standard-setting participants. One way of preventing standardization from inducing antitrust liability is to strictly restrict the patents included in the technical specifications of the standard to 'essential' ones. That is, to only include 'essential patents' for which there are no economically feasible substitutes and will be inevitably infringed when implementing the standard.[380] The inclusion of only 'essential patents' in a standard would greatly reduce the possibility of a group of competitors, holding competing proprietary technologies, colluding with each other. There is no collusion among all essential patent holders since their patents are essential to the proposed

[379] See Cf.Robert Pitofsky, Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy, 16 Berkeley Technology Law Journal, 2001, at 535.
[380] See previous discussions in relation to 'essential patents' on page 28.

standard and there is no other option available except for including all the essential patents in order to realize the proposed technical function of the final standard. The preclusion of non-essential patents in a standard ensures that standardization does not facilitate collusion to avoid supposed competition. Competition is not eliminated among non-essential patent holders nor is restricted between essential and non-essential patent holders. It is stressed that the idea of 'essential patents' is applicable in standardization conducted by SSOs of any scale regardless of different jurisdictions.

B. Implementing private SSOs IP policies to regulate monopolistic patent exploitations ('patent holdups') in standardization

The requirement of 'essential patents' is only a prerequisite to ensure that standardization would not be considered to be collusive or anticompetitive per se. The patent-related issues actually arise more commonly in standardization in respect of monopolistic exploitations of the above essential patents. The essential patent holders in standardization are able to 'hold up' other potential standard adopters, either by precluding competitors from using their essential patents in the standard based on their legally granted exclusive rights, or by demanding supra-competitive licensing royalties far out of proportion of their true economic contribution.[381] A patent holder is supposed to enjoy exclusive rights on the exploitation of his patent, however, the exclusive patent rights, once being manipulated beyond a proper boundary, will pose great threat to procompetitive standardization and ultimately will harm free technology competition and consumer welfare.

[381] See previous discussions on 'patent holdups' on page 45.

Since the whole process of private standardization is conducted through a special SSO, it is advisable that the organization establishes a set of clear and consistent internal bylaws for its participants to comply with, in order to clarify rights and obligations ax ante and to avoid the above patent holdup problems through the effort of the private organization itself. The bylaws of an SSO for the purpose of preventing patent holders from manipulating their patent rights in standardization generally take the form of an IP policy. Taking into consideration of the potential patent holdup problems that could emerge in standardization, it is necessary that an SSO IP policy require the two major obligations of its participating patent holders: patent disclosure and patent licensing. A disclosure obligation required by an SSO IP policy would deter patent holders from hiding the existence of their patents in the proposed standard and subsequently trying to exercise their exclusive rights after the standard has become widely adopted. [382] By explicitly requiring all participants to disclose their published patents and patent applications as early as reasonably possible, an SSO IP policy will leave few opportunities for patentees to capture the standard and explore their exclusive rights by surprise. A licensing obligation requires that essential patent holders in standardization agree to grant licenses to all interested standard adopters to use their patents on RAND terms. [383] In this way, there would be no room for ambitious patentees to demand unreasonable royalties for the use of their technologies embedded in the standard. The combination of patent disclosure and licensing obligations forms the most powerful part for an SSO IP policy to restrict the exclusive exercises of patent rights in standardization. Such an IP policy in the private sector is both flexible and effective in avoiding or solving the patent holdup problems in standardization. When analyzing the proper

[382] See previous discussion on the patent disclosure obligation starting from page 54.
[383] See previous discussion on the patent licensing obligation starting from page 72.

SSOs IP policies in private sectors, existing international SSOs IP policies and lessons from the US were mainly referred and consolidated, for the purpose of providing guidance for Chinese SSOs in drafting their own IP policies.

C. Respectively applying public laws to enforce private SSOs IP policies and to regulate patent-related issues in standardization

SSOs IP policies are private regulations which are effective only to the extent that they are enforceable. When there is noncompliance with the policy or there are disputes regarding the policy itself, such a policy in the private sector will need help from more powerful authorities to ensure its enforceability. These more powerful authorities are public laws and regulations, which have their own merits in preventing and resolving the patent-related issues in standardization, compared to private SSO IP policies.

Generally speaking, an SSO IP policy regarding IP ownership or IP management can be treated as a kind of implicit contracts between members (participants) of the SSO. These members or participants agree to abide by the policy the moment they join in the ongoing standardization. Therefore, noncompliance with the IP policy might result in the liability for breach of contract. The general principles of contract laws could be applied to interpret the contract-like SSOs IP policies when there are disputes. However, contract laws (regardless of different jurisdictions) tend to be inapplicable when there are no relevant IP policies regarding the dispute or when there is no IP policy at all. Besides, contract laws are also unenforceable beyond the boundary of the organization since an SSO IP policy is at most a contract binding the relevant SSO members or participants.

Since the patent-related issues in standardization mostly take the form of monopolistic exploitations of patent rights, these issues may be directly regulated by IP laws. The doctrine of patent misuse is specifically proposed to regulate exploitations of patent rights that exceed the lawful scope or affect competition. [384] With regard to standardization, that means manipulative exercises of exclusive patent rights in pursuit of unreasonably high profits (beyond the lawful scope stipulated by patent laws) could be condemned as a misuse of patent rights. Interested adopters of a standard in China thus could apply the proposed doctrine of patent misuse against the infringement claims brought by patent holders. Furthermore, the compulsory licensing provided in the Patent Law of China is theoretically applicable in front of refusal to license in standardization. However, it is highlighted that such compulsory license needs to be applied very cautiously and only when the refusal to license in standardization has greatly affected the public interest.[385]

Last but not least, competition law can be relied on as a safety valve to prevent all anticompetitive behaviors in standardization. When fair and free competition is threatened in the process of standardization, regardless of whether there is an applicable SSO IP policy or a patent misuse behavior, competition law can always be applied to protect competition within or beyond the proposed standard. One of the patent-related issues in standardization, refusal of licensing or unreasonable licensing royalties, could be regulated under the newly enacted Antimonopoly Law of China in context of abuse of a dominant market position. Prior to condemnation of an 'abuse', it is necessary to first identify the presence of monopolization or dominance. It is widely

[384] See previous discussions on 'patent misuse doctrine' from pages 104 to 118.
[385] See previous discussions on 'compulsory licensing' from pages 118 to 124.

acknowledged in different jurisdictions that market share (as stipulated by the Antimonopoly Law of China) or market power (as stipulated by the US antitrust laws) is the most important and direct reference when determining dominance in the relevant market. [386] It is worth noting that, when it comes to standardization, the market power of a single patent essential to a standard should be evaluated based on the market power of the whole standard.[387] The reason is quite obvious: the final standard is applied as a whole, which includes many patents bundled together to achieve the final function. One essential patentee's refusal to license could deny potential standard adopters the access to use the whole standard, which also includes other patentees' technologies. In this regard, the patentee's exclusive rights actually are expanded to the whole standard instead of his patent only, therefore, the market power of his essential patent should be evaluated on an expanded basis to take in to account the market power of the whole standard too. Once dominant market position is proved, further modern economics-based and effects-based analysis should be conducted to decide if the patentee's exploitation of his patent rights constitutes an abuse of that dominant position, thus resulting in harming competition and consumer welfare. The condemnation of abuse of dominant market positions cannot similarly be applied when it comes to nondisclosure of an essential patent. The reason is because it is still too early to determine an 'abuse' and the presence of dominance by the mere conduct of nondisclosure. On this point, the theory from the US antitrust laws, 'attempted monopolization', is of great referential value and is suggested to be included in Chinese Antimonopoly Law. When identifying attempted monopolization as regards nondisclosure of an essential patent in standardization, it is very important that the patentee fails to disclose

[386] See previous discussions on 'market share' or 'market power' from pages 131 to 134.
[387] See previous discussions on pages 140-143.

intentionally and the SSO would not have chosen the patent if it were disclosed in the first place. Furthermore, there must be a probability that the final standard will possess certain extent of market power in the relevant market. [388] Without satisfying these conditions, it is unlikely to regulate nondisclosure of essential patents in standardization by 'attempted monopolization'.

Recommendations

The significance of standardization in the 21st century has been widely acknowledged by policy makers, legal practitioners, scholars and technological industry participants. Although it has been brought up to the level of a national strategy, standardization is still new in China. Fortunately, the activities of standard-setting in this high-tech era are relatively international, which means they would not be restricted by jurisdictions and they share the essential features regardless of their scales or purposes. The existing SSOs IP policies and public laws discussed in this paper, some of which are extracted from the sophisticated experience accumulated through years of worldwide standardization practice, are mostly applicable to standardization in China. In addition, the following extra attentions have to be paid to better serve the Chinese characteristic standardization.

1. Acknowledging interoperability standardization and its patent-related issues in the specific standardization law

[388] See previous discussions on pages 145-147.

The present law of standardization in China came into effect on 1st April 1989. The twenty-six articles of this standardization law only provide general guidelines for Chinese standardization. It can be shown from the whole passage of the law that standardization back that time merely refers to standards for conformity, safety or quality.[389] There are no such terms like interoperability standards or intellectual property in the law, let alone relevant regulations on patent exploitations in standardization. Clearly, the current standardization law of China is too outdated to cater to standardization in the 21st century. There is a great need for a new standardization law which could be used as guidance for dealing with the patent-related issues in standardization.

The new standardization law may include guidance for private standardization, such as formalizing the basic private standard-setting procedure, the operation of SSOs, the requirement of IP policies in standardization, etc. The law may cover all the international norms like 'essential patents', 'patent holdup', 'patent disclosure' and 'RAND licensing', in respect of patent exploitations in interoperability standardization. It does not mean that the standardization law will take the place of private SSOs IP policies and stipulates the whole procedure of standardization comprehensively. The law needs just to establish the basic principles, such as early disclosures and reasonable royalties for wide adoptions of standards, so that potential standard setters or standard adopters would have basic guidance for their conducts in standardization. There is no doubt that standardization law is in perfect position in regulating issues arising in standardization, including patent-related ones.

[389] See Standardization Law of China, 1989, at: http://www.china-cas.org/chinese/flfg/index.htm.

2. Implementing a universal SSO IP policy for private standardization

Although private standardization in China is not as prevalent as it is the US or EU, it is playing a gradually important part in Chinese standardization. Therefore, it might be advisable to formulate a universal set of IP policy for all private SSOs or standard-setting joint ventures to adopt. This template-like IP policy could be very specific in respect of the patent exploitations in standardization. For example, it could require patent disclosure specific enough to cover the requirements of what, when, how, to whom to disclose the patents in standardization. It could also stipulate the consequences for noncompliance with the policy. With the reference of the readily available SSOs IP policies of the international organizations as discussed in Chapter II, it is not that difficult for China to come up with the proper IP policy for standardization. All private SSOs are required to enact their internal bylaws referring to the template IP policy and they are encouraged to adopt stricter rules than the template IP policy requires, in order to appropriately address the patent-related issues in standardization. This may sound a little bit extreme, to require a one-size-fits-all policy. However, as far as I see, taking into consideration of China being a huge stage for all scales of standardization, it is better that private SSOs in China apply a universal set of IP policies when conducting standardization, compared to the chaos without a settled policy. After all, private IP policies are more flexible in dealing with the patent-related issues, which should always be considered first before we resort to public laws.

3. Improving the current patent system of China

A lot of patent related disputes arise in the process of standardization due to the imperfectness of the patent system, either technologically or legally. Many 'questionable' patents existing in the current system, e.g., patents which are in fact invalid or include too broad claims, have posed great threat to the seriousness of the intellectual property framework. The overflow of 'questionable' patents which contain little technological value undoubtedly would affect technical standardization, whose effectiveness relies very much on the technological merits of the patents involved in its technical specifications. Apparently, raising up the threshold of patentability in order to filter out 'questionable' patents as many as possible is one of the possible ways to ensure the effectiveness and the procompetitiveness of technical standardization. Besides quality control of the patents accepted for protection, it is necessary that Chinese patent laws are sophisticated enough to be able to handle disputes particularly in the fields of patent exploitations and patent licensing. As discussed in Chapter III, it is necessary to add specific rules such as the doctrine of patent misuse into the Patent Law of China to guarantee that the exclusive patent rights be exploited within an appropriate boundary. Besides, it is also very important that patent laws could provide relatively clear guidance to patent licensing issues, e.g., how should license royalties be calculated, what is a reasonable licensing rate, how should patent licensing work when it comes to multiple licensers and licensees, etc. A clear set of licensing rules stipulated by patent laws would be an efficient way in resolving disputes arising during the implementation of RAND licensing obligations required by SSO IP policies.

4. Formulating appropriate public laws in regulating the patent-related issues in standardization

A universal private IP policy for SSOs to adopt cannot be comprehensive enough to avoid any disputes. Therefore, it is necessary that public laws and legal principles are applicable when private policies fail to deal with all the patent-related issues in standardization. As discussed in Chapter III, contract law, patent law and antimonopoly law have their respective strengths in resolving the patent-related issues in standardization. While contract law has the most sophisticated legal principles and guidelines in dealing with noncompliance and disputes relating to SSOs IP policies, its applicable scope is restricted within the boundary of standardization members and participants. The proposed patent misuse doctrine, which could fill in the gap where contract law is incapable and at the same time avoid the ponderous machinery of antimonopoly, however, lacks of a clear applicable scope since it has not been officially introduced to Chinese patent laws. Antimonopoly law, although applicable and effective in regulating all patent-related issues which may harm competition in standardization, generally tends to realize its legal function at the cost of complicated and time-consuming investigation procedures. In addition, the Antimonopoly Law of China has just come into effect less than one year and its articles are too general to be applied in practical antimonopoly examinations and to tackle the patent-related issues in standardization. Under current circumstances, it is advisable to apply a combination of the rules and principles of standardization law, contract law, patent law and antimonopoly law, on a case by case basis, to effectively resolve the patent-related issues in standardization.

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