Delineating the Scope of Protection for Technological Protection Measures in an Equitable Way: Approaches of US & EU - A Frame of Reference for China’s Legislation

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Technological protection measures (TPMs) widely used by content holders to control the access and the use of their content in the digital environment have been recognized by several important international treaties and the national laws of their member states. Due to the absence of a uniform definition of the scope of protection for TPMs, different implementation regimes have evolved. The approaches by the US and EU indicate the importance of striking a balance between the interests of copyright holders and that of the public and consumers in designing the implementation regime. It is sensible to develop an equitable system to achieve the comprehensive objectives of protecting copyright, increasing consumer welfare, promoting information dissemination, and encouraging fair competition. The experience of the US and EU is also a frame of reference for China’s legislation.

Keywords: Technological protection measures, anti-circumvention, copyright, fair competition

Technological protection measures (TPMs) are widely used by content holders to control the access and the use of their content in the digital environment. TPMs can generally be classified into two categories. The first kind of TPMs aims to restrict the access of the protected content to users who legally obtain authorization by setting passwords, cryptography, or other security arrangements. The second is developed to control the subsequent use of the content after users have successfully accessed the content through a licensing agreement. TPMs attempt to prevent copyright infringement by making unauthorized uses costly. As a result, TPMs serve as a second level of deterrence against illegal uses of copyrighted material by users who lack the fear of legal liability. The long-lasting battle between copyright holders and hackers has become a cat - and - mouse struggle considering the fact that the former are always dedicated to complicating TPMs and the latter never stop the hacking, circumventing or bypassing. On the one hand, the copyright of the content under protection of TPMs should be fully respected. On the other hand, however, the balance between the interests of right holders and the interests of the public should not be neglected. It can be observed that the technology development has empowered the right holders to control their content and even to exclude fair competition. As a result, the interests and welfare of ordinary consumers are impaired to some extent. It is of significance hence, to appropriately define the scope of protection for TPMs in order to strike a balance in the copyright regime.

Statutory Background
In order to respond to rampant copyright infringement, TPMs have been recognized by the World Intellectual Property Organization Copyright Treaty (WCT), the World Intellectual Property Organization Performances and Phonograms Treaty (WPPT), and national copyright systems. Both WCT and WPPT require all the member countries to prohibit the circumvention of effective TPMs to use the protected content unless such circumvention is authorized by right holders or allowed by law (Article 11 of the WCT and Article 18 of the WPPT). Upon the obligation of complying with the international treaties, member countries should transpose this

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The Definition of ‘Effective’ TPMs

Under the scheme of the WCT and WPPT, the effectiveness is mentioned in the anti-circumvention clauses, but without further explanation.

Article 11 of the WCT provides that ‘contracting parties shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of the rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law’.

Likewise, Article 18 of the WPPT also introduces the term of ‘effective technological measures’ and states that ‘contracting parties shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by performers or producers of phonograms in connection with the exercise of their rights under this Treaty and that restrict acts, in respect of their performances or phonograms, which are not authorized by the performers or the producers of phonograms concerned or permitted by law’.

‘Effective’ is usually understood as something that successfully works in the way that was intended. Indeed, however, it is difficult to set a criterion for measuring how ‘effective’ a TPM is, because an excessively strong or excessively weak definition will destroy the balance between right holders and users under the copyright regime. If a stronger definition is used, few TPMs can be deemed as ‘effective’ considering that in theory all the technical measures can be ultimately circumvented. On the other hand, if a weaker definition is used, technical measures that can be easily bypassed would be effective, which would unduly favour the content industry.

In the US, the DMCA deems a technological measure to be effective if it, in the ordinary course of its operation, limits the access to or exercise of the copyrighted work [Sections 1201, (a)(3)(B) and (b)(2)(B)]. Literally, the standpoint is the right holder’s intention of using TPMs to protect its content. In other words, only if the right holder has adopted technical measures in an ordinary way to restrict the access to its work, should the TPMs be deemed as effective; irrespective of the complexity of the TPMs and whether users can easily access the sources of circumvention. From this point of view, the low threshold for ‘effective’ in the DMCA excessively favours right holders. Nevertheless, the judicial practice elaborates the requirements of ‘effective’, which will be discussed later.

The EUCD also provides an interpretation in this context: a technological measure is effective where the use of the work is controlled by the copyright owner through either an access control or protection process such as encryption, scrambling or other transformation of the work, or a copy control mechanism, which achieves the intended protection [Article 6(3)]. Some EU Member States mirror the description as set forth in Article 6(3) EUCD, but do not further clarify what elements should be considered in the effectiveness analysis.

Therefore, achieving the protection objective is a necessary condition for deeming TPMs effective. There are two approaches to determine whether TPMs achieve their protection objective. One is from the standpoint of experts according to which a technological measure would not be effective where it can no longer work for an average technical expert. The other one is from the standpoint of an average end-user that if he/she can easily bypass the TPM, it would be deemed legally ineffective. Because TPMs are generally used to restrict and control consumers’ access to and exercise of the copyrighted work, it is more sensible to adopt the latter approach to determine whether it is effective.

In the US, a famous case addressing ‘effective technological measures’ is Agfa Monotype Corp & International Typeface Corp v Adobe Systems. In this case, the plaintiffs were the right holders of approximately 3,300 fonts in TrueType format typefaces. The defendant was the developer and the copyright holder of Adobe Acrobat. The plaintiffs brought a suit against the defendant by alleging that the defendant violated the anti-circumvention
provision in the DMCA because Acrobat 5.0 developed and released by the defendant allowed its users to edit a form field or free text annotation using the plaintiffs’ TrueType Fonts without their permission. One of the most essential disputes focused on whether the copyrighted TrueType Fonts were protected by an effective technological measure. After the hearing, the court rejected the plaintiffs’ claim mainly based on the two points. The first being that the plaintiff failed to prove TrueType Fonts were effectively protected by the technological measure, namely embedding bits, because embedding bits did not prevent copying and could be easily modified with only lines of code. The second being that the plaintiff could not establish that the defendant’s designing or manufacturing Acrobat 5.0, or the parts of it, was primarily for the purpose of circumventing the plaintiffs’ embedding bits. Accordingly, the court rejected the plaintiffs’ contention regarding the effective TPMs and concluded that embedding bits did not ‘effectively protect the right of copyright owner’. The court’s decision indicates that the determinants of effective technological measures include not only the illegal intention to circumvent but also the level of difficulty of circumvention.

Another case, Finnish Content Scrambling System (CSS), provokes serious consideration on the standard of effective technological measures. In this case, the defendants, Mikko Rauhala, created source code circumventing CSS and published it on their own website. They were charged with illegally manufacturing and distributing a circumventing tool and providing services for circumventing effective TPMs. In the first instance, after hearing the opinions of two technical expert witnesses, the district court rejected the plaintiffs’ claims by ruling that circumventing CSS encryption could not be deemed to be illegal because CSS encryption was ineffective. The crucial part of the court’s reasoning was that: ‘[S]ince a Norwegian hacker succeeded in circumventing CSS protection used in DVDs in 1999, end-users have been able to get with ease tens of similar circumventing software from the Internet even free of charge. …CSS protection can no longer be held ‘effective’ as defined in law’. However, this decision was not only refuted by the Finnish Copyright Council, but also overturned by the court of appeal. After three meetings, the Finnish Copyright Council offered a unanimous opinion that the district court failed to exactly examine how easy the circumvention of protection measures actually is. It further went on state that when analysing the effectiveness of TPMs, it is essential to consider how many average users in actual fact could perform the circumventing operation without familiarizing themselves extensively with relevant knowledge, even though the sequence of commands was easily accessible. In the second instance, the court of appeal adopted a subjective approach and emphasized the importance of the manufacturer’s intention of protecting copyright by using technological measures. It held that ‘CSS protection was intended in its normal use to prevent or restrict acts on works or other material protected by copyright, the protection must be considered, taking in account the time when the circumvention took place, as such which has achieved its protection objective’. More interestingly, the court of appeal seriously criticized the decision of the district court by reasoning that its approach in examining the concept of effective TPMs would imply that a TPM would be ineffective as soon as it had been illegally bypassed. This case proposed several essential factors to be considered in determining whether the TPM is effective, including the manufacturer’s intention of protection, the ease of circumvention, and other relevant factors. Despite this case, an open question is left in the EU as to what test should be used to analyse the concepts of ‘effectiveness’ and ‘achieves its protection objective’.

In China, the issue concerning effective TPMs is worth discussing since no definition is given to ‘effective technological measures’ in the Copyright Law. In contrast, in the Regulations for Protection of Computer Software and the Regulations on the Protection of the Right to Network Dissemination of Information (RNDI) defines ‘technical measures’ as ‘the effective technologies, devices, or components used to prevent or limit others from browsing or enjoying works, performances, phonograms or audiovisual recordings without permission from the owner, or from providing the works, performances, phonograms or audiovisual recordings to the public through the network without the owner’s permission’. However, it does not give an explanation of the criterion of effective technological measures.

The standard of ‘effective technological measures’ has also attracted attention in Chinese judicial practice. In Zhejiang Fanya Ltd v Beijing Baidu Ltd, the court took into consideration the standard of
‘effective’ to establish legal liability. In this case, the plaintiff established a music website through which they provided pre-paid service to users. In order to restrict the users’ access to and downloading of its copyrighted musical works, the plaintiff set passwords and corresponding procedures of pre-payment. The defendant was a professional service provider of a search engine providing hyperlinks. The plaintiff filed an infringement suit against Baidu by claiming that the links provided by the defendant directly located the music files stored in the plaintiff’s music database, and thereby made the copyrighted music works publicly available online without opening the original webpage. The No 1 Intermediate People’s Court of Beijing rejected the plaintiff’s argument by reasoning that the plaintiff failed to establish an effective TPM to prevent linkage, resulting in that the contents on its own website could be retrieved and shared on the Internet. Later, the second instance court upheld such an opinion.

Overall, the court’s decision is sensible. The technology of searching engine is a common tool for location online and widely used by end-users. Considering the fact that this common technology can provide the public with links to the URL address of the alleged content and thereby easily circumvent the technological measures upon it, such a TPM cannot be defined as ‘effective’. However, the court did not elaborate the concept of ‘effective’ herein, which does nothing to strengthen the implications of this case for the digital environment in China.

Consequently, an additional article should be added to define the term of ‘effective TPMs’ in China’s Copyright Law. It is suggested that a stronger yardstick be used to measure ‘effective’ to avoid granting right holders excessive privileges since the right holders setting TPMs generally have professional sources of technical support compared to ordinary consumers. It can follow the EUDC’s approach and give a further explanation. In sum, the article is proposed as follows:

‘Technological measures shall be deemed ‘effective’ where in the normal course of its operation, the use of a protected work or other subject matter is controlled by the right holders through application of an access control or protection process, such as encryption, scrambling or other transformation of the work or other subject-matter or a copy control mechanism, which achieves the protection objective in relation to the average end-user. Technological measures are deemed not to be effective where they can no longer prevent accessing by an average end-user who merely has normal knowledge, experience and ability in the relevant regime.’

The Purpose of Setting TPMs

Another issue that merits discussion is what kind of TPMs should be entitled to protection under the anti-circumvention provision. Setting TPMs are justified in its purposes of protecting copyright, preventing competition, or both of them. On the one hand, the anti-circumvention provision works well to effectively protect copyright by granting the right holder privileges to prevent circumventing TPMs. On the other hand, TPMs usually serves to exclude competition in the relevant market, which deviates from the legislative purpose of the anti-circumvention rule.

Two US cases addressed the issue whether a technological measure can be the beneficiary of the anti-circumvention provision if its primary purpose is not to protect copyright. In Chamberlain Group v Skylink Technologies, the Federal Circuit concluded that the defendant, who manufactured universal wireless transmitters that allowed the user to operate the plaintiff’s products without the plaintiff’s equipment, did not violate the DMCA. In rejecting the plaintiff’s claims, the court underlined that the intention of circumvention conducted by Skylink was not to infringe the copyrighted content, but to interoperate with it. Such a decision demonstrates that the court imposes a heavy burden upon the copyright owner to prove a reasonable relationship between exercise of copyright and the circumvention concerned when deciding liability.

The other case Lexmark v Static Control Components concerned Lexmark, a manufacturer of laser printers and replacement toner cartridges. In order to prevent the third party from refilling its original toner cartridges, Lexmark embedded special software on microchip of each toner cartridge. Lexmark alleged that Static Control Components (SCC) should be liable for circumvention under DMCA because SCC manufactured and sold its own microchips that made it possible to replace Lexmark’s replacement toner cartridges. The Sixth Circuit rejected Lexmark’s contention and ruled that Lexmark’s toner software was primarily a lock-out device, which is ‘not generally entitled to protection’. The fundamental implication of this case is that software primarily functioning as a lock-out device was not entitled to protection under the anti-circumvention regulation.
These two cases direct attention to the purpose of setting TPMs. From the views of the courts, only if the TPMs are established with the intention to protect copyright rather than prevent competition, are they eligible for the application of the anti-circumvention provision. In addition, the relationship between copyright law and antitrust law is highlighted in that ‘DMCA, as part of the Copyright Act, does not limit the scope of the antitrust laws, either explicitly or implicitly.’

Indeed, there are few provisions offering guides for restricting the abuse of the anti-circumvention provision in Chinese Copyright Law. In deciding the scope of TPMs covered by the anti-circumvention statues, the legislative objectives, the rationale behind legislation, balance of interests between different parties should be fully taken into consideration. In light of this, it is suggested a particular sub-article be added to exclude those TPMs whose primary purpose is not copyright protection from the shield of the anti-circumvention provision as follows:

‘For achieving objectives of this law, the expression ‘technological measures’ should refer to any technology, device or component that, in the normal course of its operation, is designed to prevent and limit actions in respect of protected works or other subject-matter protected by this law, which are not permitted by the right holders.

The technological protection measures that are primarily designed or produced for the following purposes shall not be determined as technological protection measures protected by the Copyright Law: (1) to achieve anti-competition purposes by using technological protection measures of little significance to copyright protection; (2) to damage the computer systems of users; (3) any other purpose detrimental to the protection of public safety.’

Exceptions to TPMs

In an analog environment, the limitation provisions are developed to approach a conventional balance between the public and right holders; however, the digital technological development has distorted such a balance. Confronted with the risk of copyright piracy, content industries not only endeavour to incrementally upgrade TPMs to make illegal copying of protected content more difficult, but also push legislation for supporting TPMs to strengthen the right holders’ control of the protected content.

Overall, the anti-circumvention rule, with very limited exemptions, excessively favours the content industries. Some access to and uses of copyrighted content in analog form are allowed under the fair use doctrine, but the story is totally different if the copyrighted content is in digital form and protected by TPMs. Supposing a work protected by TPMs exists only in digital form, the fair use doctrine seems completely useless to facilitate users’ access to the work. In this circumstance, the anti-circumvention rule actually reduces the opportunities to access a digital work protected by TPMs in comparison to an analog work. In other words, some works that can be ‘fair used’ in an analog environment, become inaccessible in a digital world. Therefore, it is essential to deliberately design exemptions to secure the need of society.

It is worth briefly reviewing two approaches concerning exceptions to the anti-circumvention framework: the DMCA model and the EUCD model. The DMCA model enumerates some exceptions to the liability for circumvention or transaction for circumvention. By contrast, the EUCD does not specially include exceptions to the anti-circumvention framework, ‘but rather introduces a unique legislative mechanism which foresees an ultimate responsibility on the right holders to accommodate certain exceptions to copyright or related rights.’ Under Article 6(4)(1), right holders are encouraged to take voluntary measures to ensure that the benefits of exceptions can be realized in the first place. In the circumstance where the right holders fail to take the aforesaid measures, member states have an obligation to take appropriate measures to ensure that one can indeed benefit from the relevant exceptions.

The DMCA follows two approaches to stipulate exceptions to prohibition of circumvention: statutory exceptions and exceptions stipulated by the Library of Congress. As for the former, the DMCA includes several statutory exceptions to liability for circumvention. Because the DMCA divides the conduct of circumvention into two categories, namely, direct circumvention and transaction conduct (Table 1), it correspondingly distinguishes these two types of conduct in setting exceptions to liability for illegally circumventing TPMs. In detail, seven statutory exceptions under the DMCA apply to the prohibition of circumvention access controls, and five of them apply to the prohibition of illegal transaction to circumvention technology, product, service, or device (Table 2).
The other approach under Section 1201(a)(1)(C) of the DMCA are the exceptions allowing the circumvention of access control technologies released by the Library of Congress. In order to respond to the concerns that the provisions of forbidding circumvention would adversely affect normal non-infringing uses regarding particular classes of copyrighted works, the Library of Congress is obliged to determine every three years whether users of certain classes of works are, or are likely to be adversely affected in their ability to undertake non-infringing uses. Moreover, the Library of Congress is also required every three years to determine and publish the particular classes of works regarding which conduct of circumvention would be allowed [Section 1201(a)(1)(D)]. The aforementioned decisions of the Library of Congress are made upon the recommendation of the Registrar of Copyrights. Under the latest rulemaking proceeding, the Library of Congress announced non-infringing uses of six classes of works that will not violate the prohibition against circumvention. These classes of works include: DVDs, mobile phone networks, mobile phone software applications, video games, dongles, and e-books. In deciding these exceptions, the Library of Congress seriously examined the factors impacting justification of these exemptions: (1) the availability of copyrighted works, (2) the availability of works for nonprofit archival, preservation, and educational purposes, (3) the impact that the prohibition on the circumvention of technological measures applied to copyrighted works has on criticism, comment, news reporting, teaching, scholarship, or research, and (4) the effect of circumvention of technological measures on the market for or value of copyrighted works. It was found that if these exemptions were granted, the aforesaid four factors would be unlikely to be adversely affected by the proposed exemptions. Moreover, the new exceptions increased the consumers’ benefits since they were allowed to use the products by alternative methods. Thus, people who lawfully obtain a lawfully made DVD that is protected by TPMs may circumvent the TPMs for certain purposes; the owners of mobile phones can jailbreak TPMs contained in phone firmware to install applications. Other legitimate uses are mobile phones users are allowed to change mobile carriers by jailbreaking; visually impaired people may access e-books by transforming the text into a read-aloud format through circumventing dongles, and so on.

### Table 2 — Exceptions to liability concerning circumventing TPMs

<table>
<thead>
<tr>
<th>Exceptions to liability in the circumvention of access measures</th>
<th>Exceptions to liability in the transaction using devices controlling access</th>
<th>Exceptions to liability in the transaction using devices controlling exploitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-profit libraries, archives, and educational institutions</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Law enforcement, intelligence, and other government activities</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reverse engineering</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Encryption research</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Minors</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Protection of personality identifying information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security testing</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

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### Table 1 — The anti-circumvention provision under the DMCA

<table>
<thead>
<tr>
<th>Category of TPMs</th>
<th>Anti-circumvention article</th>
<th>Prohibited conduct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control of access to copyrighted work</td>
<td>17 USC § 1201(a)(1): No person shall circumvent a technological measure that effectively controls access to a work protected under this title.</td>
<td>Direct circumvention</td>
</tr>
<tr>
<td></td>
<td>17 USC § 1201(a)(2): No person shall manufacture, import, provide, or otherwise traffic in any technology, product, service, device, component, or part thereof, that is primarily designed or produced for the purpose of circumventing a technological measure that effectively controls access to a work protected under this title.</td>
<td>Transaction conduct</td>
</tr>
<tr>
<td>Control of exercise of copyrighted work</td>
<td>17 USC § 1201(b)(1): No person shall manufacture, import, provide, or otherwise traffic in any technology, product, service, device, component, or part thereof, that is primarily designed or produced for the purpose of circumventing protection afforded by a technological measure that effectively protects a right of a copyright owner under this title.</td>
<td>Transaction conduct</td>
</tr>
</tbody>
</table>
It should be noted that these exemptions are significantly narrow because they are allowed for very specific purposes. For example, DVD circumvention is limited to a usage for getting short clips for non-commercial uses, to only CSS encryption, and to only DVD media format. Video games circumvention merely permits circumvention on personal computers for the purpose of security analysis and correction. Likewise, jailbreaking to install applications will not prohibit manufacturers of mobile phones from developing other technological measures. Furthermore, although these exemptions legalize new uses of products protected under TPMs, they do not allow commercial undertakings to market or sell products or devices that are primarily designed to bypass TPMs. In addition, this administrative procedure adopted by the Library of Congress does not grant exemptions from copy-control technology; as a result, the permission for ‘an individual to gain access to the work by circumventing the access-control measure does not assist the individual in making a copy for fair use purposes.’ Such an administrative approach, narrowly enabling access and use in specific circumstances, aims to redress the imbalance of rights extremely in favour of right holders using TPMs to lock their works against users’ access or uses.

Section 1201(a) intends to preserve fair use, but it is not a simple task for the courts to develop fair use jurisprudence. Even though the courts could on a case-by-case basis delineate the scope of lawful uses under Section 1201(a), there would be always many activities in light of new technologies which the courts have not assessed yet. Because the Library of Congress makes a statement concerning exceptions every three years, it can keep pace with the uncertainty generated by technological changes and social changes. For example, the issue whether jailbreaking smart phone violates the anti-circumvention provision, has sparked intense debates. The rules in this context made by the Library of Congress however, have given certain answers to handset owners, independent software developers, and manufacturers. Moreover, such exception provisions are good for small and medium enterprises due to the effects of increasing competition in the market. In sum, the method of government intervention is of significance in the regime of exception to anti-circumvention.

The EUCD takes a different approach from the DMCA, considering that it does not list particular exemptions to the anti-circumvention regime. It has two special features:

First, with respect to the public policy exceptions, the EUCD conceived ‘two steps’ to ensure its objectives can be actually achieved. In the first place, the right holders are invited to adopt voluntary measures, including agreements between right holders and other parties concerned, to make the public policy exceptions available to the users [Article 6(4)(1)]. In absence of the voluntary measures, Member States are required to ensure that right holders make available the exceptions through national legislation. In practice, Member States take different approaches to implement this obligation. For example, in case the beneficiaries deem that the right holders do nothing regarding voluntary measures to ensure that the beneficiaries of the public policy exceptions can in fact get benefits, they may appeal to certain institutes especially in charge of this issue, such as the Copyright License Tribunal (Denmark), the Secretary of State (UK), or the High Court (Ireland). In addition, Denmark’s approach is distinctive considering that beneficiaries are permitted to circumvent the TPMs without approval of the Tribunal or anyone else in the circumstance where the right holders fail to comply with the stipulations to ensure public policy exceptions within four weeks. However, the public policy exceptions do not apply to the copyrighted works that the right holders provide to the public subject to contractual terms. In other words, both types of exceptions cannot apply to the case of an ‘on-demand-service’.

Second, in contrast to the DMCA, the EUCD does not require Member States to include exceptions to the prohibition against circumvention trafficking. Article 6(1) and Article 6(2) of the EUCD provide prohibitions against the direct circumvention and circumvention trafficking respectively. Nevertheless, all the exceptions provided are pertinent to Article 6(1), while none is pertinent to Article 6(2). This means all the illegal dealing in circumvention products enumerated in Article 6(2), including the manufacture, import, distribution, sale, rental, and advertisement, cannot be exempted from liability in any case.

As discussed above, the regime of exceptions against the anti-circumvention under the DMCA and the EUCD, each has its own features. In comparison,
the former introduces a broader scope of exceptions from liability, in view of the fact that it grants exceptions not only for direct circumvention conduct, but also for some certain transactions in circumvention products. Moreover, the exceptions under the DMCA, composed of the statutory exceptions and exemptions released by the Library of Congress indicate the legislature’s concerns over general public interest and the new emerging needs arising from technological development. By contrast, the EUCD focuses more on strategies ensuring traditional public policies, which seems somewhat rigorous and conservative. The EU’s attitude to this issue also indicates that harmonization between different cultural approaches of its Member States has not been very effective. Despite this, several EU members have attempted to extend the scope of limitation and exceptions to provide greater strength to new technologies, such as the Netherlands and UK.

This regular intervention by the DMCA is of significance due to its feasibility and efficiency. The regular intervention may positively respond to recent emerging issues based on the consideration of technological changes, development of the relevant industrial sectors, public interest, anti-trust consideration, and so on. The previous four enactments promulgated by the Library of Congress have produced a good result in reducing the uncertainty generated by the technological development, encouraging the interoperation, promoting competition and increasing information dissemination.

The ‘two steps’ approach adopted by the EUCD also has its own character. The first step, inviting right holders to take positive measures, seeks to encourage right holders to ensure the public policy exceptions available by means of supply-side initiatives. This approach holds great promise in bringing about greater access opportunities to the copyrighted content. If this approach could achieve the predicted objectives, it has significant merits of lower legislative cost and implementing cost. The second step, administrative intervention, has considerable potential for success at the first step. Prof Parchomovsky has expressed a similar opinion. He suggests that the US adopt a two-stage measure to expand the user advantages in circumventing TPMs. At the first stage, the right holders are required to expressly disclose the substance and the scope of user advantages over the concerned digital content subject with reference to the basic terms and conditions developed by the administrative authority. This measure may improve the consumer benefits by making it easier for consumers to understand the user advantages and compare the user advantages offered by different content providers. It is also expected that the right holders would scramble to expand user advantages and thereby to win the market competition. In case the right holders fail to effectively ensure and increase use advantages at the first stage, ‘Congress must be ready to implement a second strategy of specifying use privileges that content owners must provide.’ The measure at the second stage not only serves to increase the possibility of success at the first stage, but also ensures that the objective of increasing user advantages can ultimately be achieved in any case. Both the ‘two steps’ approach of the EU and Prof Parchomovsky’s proposal show the intention of encouraging the right holders to ensure and even enlarge the consumer advantages in using digital content. These approaches do not intend to take off TPMs that would prevent illegal copying unnecessary, but aim at making the practice more compliant with copyright exceptions. Nevertheless, the concept of ‘voluntary agreement’ or ‘voluntary measures’ taken by the right holders seems a product cooked up in a study and will not achieve its supposed objective in reality considering the fact that the content industries care less about enforcing compliance with copyright exceptions and consumers have limited knowledge and interest to judge which digital product provides more favourable conditions in the context of user advantages than others. In this regard, an exhaustive list of copyright exceptions seems to be a more useful starting point for clearly defining the ambit of anti-circumvention exceptions.

As for the exceptions to anti-circumvention under China’s copyright framework, it actually needs substantial improvement. There is very little pertaining to this issue under the existing Copyright Law other than the only article, which states that any person shall be liable for the conduct of intentionally circumventing or destroying the technological protection measures by the right owners of works for the purpose of protecting legitimate interests in this title without the permission from the right owners, except in circumstances where laws or administrative regulations provide otherwise. Nevertheless, it seems powerless in explicitly providing for circumstances...
under which the action of circumventing TPMs by users is exempted from liability. Despite the limitations and exceptions in copyright law, it is far from enough because the original balance between the interests of the public and the interests of the right holders achieved in an analog environment has been lost in this era of information technology. Moreover, although the RNDI offers some provisions concerning exceptions to the anti-circumvention rule, their application is very limited to a small subset of cases: published written work for purpose of classroom teaching or scientific research through network, published written work for the blind through network, fulfilling official duties, and testing of computer systems or the safety capability of the network. Therefore, it is highly recommendable to craft a list of exceptions to the anti-circumvention rules. First, it is suggested that TPMs be legally obliged to comply with some exceptions listed in Article 22 that includes fundamental exceptions grounded on civil liberties. It should not neglect the justification for selection of some exceptions based on constitutional values, such as freedom of expression. Therefore, there would be few debates if exemptions from anti-circumvention were granted for a non-commercial personal copy, teaching, research, criticism and review, reproduction by libraries because they are based on fundamental freedoms and public interests. Further, it is sensible to incorporate new exceptions for TPMs, such as achieving interoperability of computer programs and encryption research. Without these exemptions, the more advanced companies may abuse the provisions of anti-circumvention to limit competition because the fear of potential lawsuit would create a drag on innovation by startup companies or small businesses. There have also been cases precluding the plaintiff’s conduct constituted unfair competition. For example, in Beijing Jingdiao v Shanghai Naikai, the plaintiff utilized encryption on the output of the computer software to prevent users from using its computer software on fine carving machines produced by other manufacturers. The court finally held that the plaintiff’s conduct constituted unfair competition. China, with its ambition of becoming an innovation leader, should enact particular rules in favour of innovative business and scientific research, but not at expense of legitimate interests of right holders. These exemptions are expected to provide innovative companies and researchers the assurance they need to develop new technologies that involve uses of copyright law.

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'It shall not be determined as illegal that a person circumvents TPMs that is developed to protect the copyright interests without the authorization of the right holders under the following circumstances where:

1. that person who has lawfully obtained a computer program or a copy of one, conducts circumvention, or offers services to the public for the purposes of circumventing a technological protection measure, for the sole purpose of making this computer program interoperable with any other computer program; or

2. that person who has lawfully obtained the work circumvents a technological protection measure for the sole purpose of encryption research, if there is no alternative to carry out such research without circumventing this technological protection measure; or

3. that person who engages in accessing a computer, computer system, or computer network, conducts circumvention solely for the purpose of good faith testing, investigating, or correcting a security flaw or vulnerability, with the authorization of the owner or operator of such computer, computer system, or computer network.'

Conclusion

In absence of a uniform definition of the scope of protection for TPMs under the international treaties, several models of implementation are developing. The essential factors involved in delineating the scope of protection include the interpretation of the term ‘effective technological measures’, the legitimate purpose of setting TPMs, and a fair and justifiable regime of exceptions. An expanded interpretation or limited interpretation of each factor will change the balance between the interests of copyright holders, consumers and the public. Indeed, the protection of intellectual creation and its related contribution should be safeguarded. On the other hand, the legislature cannot turn a blind eye to the negative affects caused by upgrading TPMs, such as deterioration of consumer welfare and the decrease in opportunities for the public to access copyrighted information. In light of the intervention by the Library of Congress, the US has made considerable efforts to
develop an equitable system to achieve the comprehensive objectives of protecting copyright, increasing consumer welfare, promoting information dissemination, and encouraging fair competition. This system that enables identified individuals to access and use the copyrighted material for limited legitimate purposes would not unreasonably impair the interests of copyright holders, because neither does it damage the original market or value of the copyrighted works, nor does it impose unrealistic burden on copyright holders.31 It also would benefit copyright holders because if the access and use strategies were properly established, there would ‘be less of a perceived need for legitimate users to seek out circumvention technologies in the first place.’23 In addition, the system adaptable to new technologies offers the legal certainty for subsequent innovation and expands consumer choice to some extent.32 In contrast, approaches adopted by EU seem relatively conservative in view of the very limited and traditional exceptions to the anti-circumvention provision.

China, should take effective measures to optimize the copyright law in this context. Currently, Chinese copyright regime that has a very small category of exemptions seemingly heavily favours copyright holders. The facts that numerous Chinese consumers hope for interoperable application and that advanced companies utilize TPMs to limit competition indicate the necessity of embracing broader exemptions from anti-circumvention. China should notice that an unclear and imbalanced copyright system ‘may result in growing barriers to the access to all types of information, which will be increasingly channeled through digital networks. Such barriers are likely to affect not only technology, but also general factual information as well as scientific knowledge. This may consolidate existing trends of not openly diffusing the results of scientific research, and thereby restrict access by developing countries to the pool of scientific knowledge.’33 In contrast, if copyright legislation were amended to appropriately delineate the scope of protection for TPMs, the imbalance of interests caused by digital technologies would be redressed. Therefore, it is sensible to adjust the copyright system to effectively respond to the current technological environment. This system should not only give sufficient incentives for innovation and value its contribution by granting exclusive control, but also appropriately leave room for subsequent creation and ensure public interests. Thus, it can be expected to ultimately benefit the society by promoting the development of culture, science, and the economy. Therefore, there is sufficient justification to embrace reasonable exemptions from anti-circumvention to allow legitimate uses and thereby encourage subsequent innovation and fair competition.

References
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