

Is Big Data a Big Dilemma or a Big Opportunity in China? Intellectual Property Protection in the Era of Big Data

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In recent years, China initiated Big Data strategies and put forward a series of legislative proposals with regard to the regulation and utilization of Big Data technology. However, academics have not reached consensus to fundamental questions such as data ownership and protection approaches yet. The intrinsic contradiction lies in the difference of values between Big Data which emphasizes “open and sharing” and intellectual property law that protects monopoly interests. This article seeks to conceptualize Big Data in a dynamic approach with an aim to frame the dialogue for further discussion. Through analyzing whether current intellectual property laws in China serve a solid base for promoting the development of big data technology, it proposes that, in order to address regulatory impracticality of Big Data, certain statutory amendments are necessary. However, regarding the revolutionized proposition of creating a “database right” or alleging “Big Data as an object of intellectual property law,” this research recommends a modest and restrained approach.

Keywords: Big Data, Intellectual Property, Data Rights, Data Ownership, Data Property, China

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1. Introduction

Big Data is everywhere.¹ As one of the most popular terms in information technology, Big Data has attracted tremendous attention not only in the creative industries but also in the field of law. Generally speaking, Big Data refers to the phenomenon of very fast-growing creation, collection, communication and use of digital data.² It is typically described through its characteristics of Volume, Velocity and Variety, the so-called “3Vs”, or “4Vs” with Veracity.³ In other literature, its scope is largely including big data technologies such as data processing or data utilization.⁴

In recent years, many countries initiated Big Data strategies and issued laws on data protection.⁵ For instance, in the EU, General Data Protection Regulation⁶ (“GDPR”) has been issued to safeguard citizens’ privacy. However little has been done in the regime of intellectual property mainly because legislators have not reached unanimity on the definition and scope of Big Data in the field of intellectual property law yet.

The intellectual property laws in data are of uncertain scope at the moment, but continue to develop along with the increase of the value of Big Data. Main data-related intellectual property rights are copyright, database right, confidentiality, trademark and patent. In this regard, the following issues are unresolved: Whether data can be owned?; If yes, who owns data?; Whether Big Data is the object of protection of intellectual property law?; and what are appropriate approaches of Big Data protection in China?

In the US and European courts, data was treated the same as tangible property. There, the tort rule of conversion was applied in such cases as *Thyroff*,⁷ which recognized the owner of data based on tangible property in the hardware and the possession of technical devices. This approach was criticized because it could not survive the Internet world and might lead to absurd result. British courts have thus denied this approach, while Germany continues to develop the new model of property in data.⁸

China, on the other hand, has not designed specific intellectual property rules to regulate Big Data. Currently, major debates exist among civil law scholars regarding such fundamental issues of Big Data as its scope and legal features, as well as legal consequences it might bring about.

Data sharing mechanism is vital for the development of Big Data. It is changing dramatically towards the equilibrium between interests in data sharing and intellectual property rights. Intellectual property has a monopoly feature which values private rights, while data sharing emphasizes openness for public interest. Generators of data are usually reluctant to share, or only selectively share unimportant data. Therefore, the major conflicts between intellectual property and data sharing may arise between the exclusiveness of intellectual property and the shareability of data; the territoriality of intellectual property law and the borderless of data sharing; and the timeliness of intellectual property and the fast update speed of data.⁹

Despite of the conflicts, the intellectual property protection and Big Data have consistent goal of creating social wealth and maximizing the public interest.¹⁰ On the one hand, the intellectual property protection will stimulate the data generator. On the other hand, meanwhile, the creative achievements using shared data require a better intellectual property system. In a word, they promote each other.

This article first seeks to conceptualize Big Data in a dynamic approach with an aim to frame the dialogue for further discussion in the area of intellectual property law. Second, it analyzes whether current intellectual property laws in China serve a solid base for promoting the development of Big Data technology. Third, it critically reviews the “first Big Data case” in China. This article proposes that, in order to address regulatory impracticality in the area of Big Data, certain statutory modifications are necessary. Regarding the revolutionized proposition of “creating a database right” or “big data as an independent object of intellectual property law,” however, this research adopts a modest and restrained approach, recommending that intellectual property law and other laws should allocate their respective roles, working together to establish the legal framework on regulating Big Data. It also proposes that protection should be in accordance with characteristics of data structure, data form, data collection and specific circumstances in data transaction.

2. What is Big Data?: Framing the Dialogue

There are various definitions of Big Data in fields of technology, economy and

industry.¹¹ However, academics have not reached consensus towards any of those conception in the field of intellectual property law. Ontology analysis is the premise of research for establishing workable intellectual property rules for the protection of Big Data.

A. The Concept of Big Data

The 2011 McKinsey Report defines Big Data as “datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze.”¹² It reveals that this definition is “intentionally subjective and incorporates a moving definition of how big a dataset needs to be in order to be considered big data.”¹³ They also acknowledged that definition can vary by sector.

From a technical point of view, Big Data is defined as a data set which is so complex and huge that it is impossible to deal with it under existing technologies.¹⁴ Its characteristics were summarized as 3Vs or 4Vs: Volume (large amount), the amount of data achieves PB level and above; Velocity (high speed), data changes fast, of high speed processing analysis requirements; Variety (various), data sources and forms are diverse; and Veracity (authenticity) high data authenticity.¹⁵

More practically, Big Data is a phenomenon which was designed to replace the traditional data sets based on database and data analysis.¹⁶ It is also a method of observation and explore, which contains some increasing useful practice using equipment and services such as electronic data recorder.¹⁷

In the market, Big Data is a new processing pattern that requires new process models to obtain greater insight into decision-making, better process optimization ability to adapt to mass, high rate of growth and diversification of information assets.¹⁸ It is a valuable company asset, an important economic input and the cornerstone of the new business model.¹⁹

A generalized definition of Big Data provides that, based on the fact that data, technology and application are three elements, Big Data is indicating large data sets, data technology and data applications.²⁰ Those are more specific definitions.

“Large data set”: possible data to make relevant decisions, usually in huge amount, various types and diverse sources;

“Big data technology”: the technologies of large data resource acquisition, storage, management, mining analysis and visual display; and

“Data application”: a new decision-making method supported by big data sets

and big data technology.²¹

For the purpose of this research, a broad view is adopted to define Big Data as (1) huge dataset produced and utilized in the process of information technology with characteristics of 5Vs; and (2) an architecture and technology of data acquisition, storage and analyze on large amount, diverse sources and various types of data.²²

For the informationization, China has been producing huge amount of data collection. Data resource of current Chinese society is the sum of both Internet data and industry data. As a kind of present data, Big Data is not only data sets with characteristics of large capacity, fast growth, various type, low value density, but also a form of new generation of information system architecture and technology that conduct data acquisition, storage, and correlation analysis. What's more, it represent a new way of thinking to help people find new knowledge from huge amounts of data information, create new value, promote new ability, form new understanding of the world and transform the world.²³

B. Big Data and Related Concepts

Big Data and data, information, database, data sets and other similar concepts are closely linked but distinct from each other. The English word 'data' means 'known' in Latin, and could also be interpreted as 'fact.'²⁴ Data is transferred into 'knowledge' through 'algorithm,' which could provide additional information. The nature of data and information is the same, as every byte of data contains information.²⁵

'Database' is a collection of data. The US adopts the concept of "collection of information."²⁶ The Encyclopedia of China defines 'database' as "interconnected data collection according to certain data model organization, storage and use in the computer system, with purpose of satisfying the needs of multiple users to a variety of applications in a department."²⁷ The European Union Database Directive defined database as "a collection of independent works, data or other materials arranged in a systematic or methodical way and individually accessible by electronic or other means".²⁸

Compared with database, Big Data covers all of the data or information, with large capacity, various types, fast access speed, high application value as the main characteristics.²⁹ The concept of database is static, while Big Data is a dynamic

idea. Existing database tools could not be used on Big Data for fetching the content, management, and processing.

C. Legal Nature of Big Data

Study on the legal attributes of Big Data has been thriving in China during the past years.³⁰ There are several major theories. First, Big Data is object of neighboring right (related right), based on the fact that in practice most data is unoriginal collection. It is preferable to protect Big Data by neighboring right rather than copyright.³¹ Second, Big Data is object of ‘property right,’ which proposes constructing an independent data property right system.³² Third, Big Data as object of ‘ownership,’ which emphasizes that the nature of asset and its exchange value match the characteristics of the ownership object.³³ Fourth, data is object of “personality right and property right,” admitting the double attributes of both personality and property that Big Data has.³⁴ Fifth, Big Data is object of ‘data assets,’ arguing that among multiple attributes that Big Data have, asset is the key.³⁵ As controller’s assets, Big Data is the premise and foundation of data trade.³⁶ Based on the concept of ‘data assets,’ theory of ‘information property’ was developed which refers to data that attached on certain carrier and fulfill the need of life and production, with characteristics of certainty, controllability, independence, value and scarcity.³⁷ As a superior concept to ‘data assets,’ ‘information property’ theory could be more proactive. It is defined as a new type of property right based on valuable and exchangeable information (data) with independent existence. It is the data assets belonging to the person who controls data.³⁸

Above mentioned theories summarize the legal attributes of Big Data from different perspectives. However, it should be admitted that the structure of Big Data is extremely complicated, including unprocessed metadata as well as processed data. It contains not only scattered, but also organized data collection which possibly contains those data which is objective of intellectual property such as work or unoriginal databases. This proves that Big Data could not be simply treated as one kind of right subject, but to be analyzed in specific cases according to its legal attributes and structure that it represents.³⁹

D. Big Data as Object of Intellectual Property

There are various views among academics towards the question of whether the data information is the object of intellectual property. Some scholars say yes, because intangible assets are the object of intellectual property law.⁴⁰ Incorporating Big Data into the intellectual property law system as an independent category, they claim, is consistent with protection form of object and reflect the same pursuit of value.⁴¹

However, opposing views in the Civil Law system argue that things could be divided into the following categories: (1) material with structure (house and car); (2) material without structure (water and electricity); (3) intangible things with structure (intellectual property); and (4) intangible things without structure (quasi-property such as stock or debenture).⁴² The object of intellectual property rights, such as technical solutions, art and business logo, are structural intellectual achievements, rather than the basic elements of intelligence - information. The object of intellectual property rights is the combination of innovative information of scheme and structure, rather than the scattered information itself.⁴³

Furthermore, Professor Mei Xiaying also argues that data is neither intellectual property object nor property from the perspective of legal attributes of civil law object.⁴⁴ First, data lacks certainty, specificity and independence that are required by civil law object. Next, the property value embodied in information represents in the trading process, while information in Big Data could not be generalized as 'assets.' More importantly, the realization of the data value depends on the operator's control. The value lies not in the data, but in the actual control.⁴⁵ In sum, regulating Big Data using intellectual property law has two theoretical obstacles. One is that the data lacks intellectual achievement so that it could not establish monopoly, while the other is that data compared with intellectual achievement, is just like chemical element versus chemical compound in which the composing element does not acquire independent value and status.⁴⁶

E. Data Ownership and Data Property

According to the transaction cost theory, a clear delineation of private property rights is an essential prelude to market transactions.⁴⁷ Therefore, in the process of exploitation, protection and transaction of Big Data, defining data property is essential.⁴⁸ Different views on Big Data property include: restrictive data

ownership, data property right, the operator's information right, platform data contracted ownership, binary ownership of basic data and value-added data, etc.⁴⁹

In China, some scholars believe that users own their personal data,⁵⁰ while the data controllers enjoy restricted ownership of anonymous data.⁵¹ The concept of "data property right" provides developers with property right to legally acquired data through process of fetching, analyzing and processing.⁵²

Some other scholars, by distinguishing public information (data) and proprietary information (data) propose "business operator's information right." With an aim to prevent the imperium protection caused by the information monopoly and to maintain the freedom of information transmission.⁵³

Furthermore, there are other categories of Big Data⁵⁴ such as public data and private data, raw data and processed data, basic data and value-added data, data used for public interest or commercial purpose, direct and indirect data, etc. However, some scholars maintain opposite views upon the idea of data property or data ownership because value of data will neither be reduced nor will it be influenced by usage. The vital challenge that Big Data faces is not technology but existing business model and profit distribution,⁵⁵ just like the value of river which comes from floating and usage rather than the source. In this sense, it is not necessary to define 'data property' or 'data ownership.'

The author would argue that the significance of 'data property' does not reflect in the intellectual property laws, but in the area of data privacy protection laws or data security laws. Different countries have adopted various legislation approaches. For instance, the EU's General Data Protection Regulation⁵⁶ will take effect in 2018 through a unified legislative model. The Regulation provides a series of strict, complete and standardized personal information protection legal framework, requiring each Member States to establish a unified system of personal privacy protection laws and regulations, in order to guarantee the free flow of personal data information between Member States and to establish a unified personal data security legal system. This regulation clarifies the data subject rights as well as the obligations of data controller and the data processor.⁵⁷

3. IP Protection of Big Data in China: Possible Approaches

The protection of intellectual property rights in relation to Big Data is mainly composed of copyright, related right, database right, patent, trade secret and general terms of anti-unfair competition law. In China, databases original in selection and arrangement are protected as work of compilation under copyright law. Trade secret data or data in compete interests are regulated under anti-unfair competition law.

A. Copyright Protection Model

According to the principle of idea expression dichotomy, copyright protects the composition of information rather than idea in content. Therefore, scattered data are not protected by copyright law.

As one of the three key factors⁵⁸ of copyright object, originality determines a single data or database must be an independent work to get protection. Article 2(5) of the Berne Convention provides:

*Collections of literary works such as encyclopedias and anthologies which, by reason of the selection and arrangement of their contents, constitute intellectual creations shall be protected as such, without prejudice to the copyright in each of the works forming part of such collections.*⁵⁹

Assembling of literary and artistic works on the choice of content and arrangement will receive protection on the premise that it does not infringe copyrights of constitutive works. A simply gathering of works does not enjoy copyright protection. Article 10 of the TRIPs Agreement specifies:

*Compilations of data or other material, whether machine readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations shall be protected as such. Such protection, which shall not extend to the data or material itself, shall be without prejudice to any copyright subsisting in the data or material itself.*⁶⁰

Article 5 of the WIPO Copyright Treaty (“WCT”) further provides:

Compilations of data or other material, in any form, which *by reason of the selection or arrangement of their contents* constitute intellectual creations, are protected as such. This protection does not extend to the data or the material itself and is without prejudice to any copyright subsisting in the data or material contained in the compilation.⁶¹

Conventions set the threshold requirement of certain level of originality, but how to apply this standard in each country depends on their own laws. Generally speaking, common law countries require authors to create independently, while continental law countries require a higher standard of originality.

The originality standard of compilation of work in WCT and the TRIPs Agreement have been under the influence of the EU Database Directive which stipulates that: “Whereas the criteria used to determine whether a database should be protected by copyright should be defined to the fact that the selection or the arrangement of the contents of the database is the author’s own intellectual creation; whereas such protection should cover the structure of the database.”⁶² This standard is higher than the ‘forehead sweat’ standard, but lower than the Germany’s “must have a creative intelligence” standards.

The US Copyright Law lists two types of works that are different from the list of works⁶³: compilations and derivative works.⁶⁴ A compilation is “a work formed by the collection and assembling of preexisting materials or of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship. The term ‘compilation’ includes collective works.”⁶⁵ Therefore, ‘compilation’ may be divided into two types of works: one is the fact compilation work and the figure compilation work, while the other is collective work which is “a work, such as a periodical issue, anthology, or encyclopedia, in which a number of contributions, constituting separate and independent works in themselves, are assembled into a collective whole.”⁶⁶ The copyright in the compilation work is independent of, and does not affect or enlarge the scope, duration, ownership, or subsistence of any copyright protection in the preexisting material.⁶⁷

The US case law also offered experience. In *Feist*, the Supreme Court rejected the copyright protection on an alphabetical arrangement phone book, which illustrated that they adopted a certain degree of originality requirement.⁶⁸ In

addition, mere fact is not protected by copyright law. Although whether the maps are object of copyright is sometimes controversial,⁶⁹ the nature of the geographic information in the nature of fact are not protected by copyright law due to the lack of original elements. Factual information, therefore, as long as not to be expressed in the manner of duplication, could be used by others.⁷⁰

The UK, on the other hand, sets up a ‘database copyright’ that is different from previous protection standard. The Copyright, Design and Patent Act 1988 provides the definition of the database and offers a higher protection standard than the traditional one, namely “by reason of the selection or arrangement of the contents of the database constitutes the author.”⁷¹ China’s Copyright Law provides:

A work created by compilation shall refer to the work which is compiled of some works, fragments of works or the data or other materials not constituting a work, and *the choice or layout of the contents of which embodies the original creation*. The copyright of the compilation work shall be enjoyed by the compiler, provided that the exercise of such copyright does not infringe upon the copyright of the pre-existing works included in the compilation.⁷²

In China, if selection and arrangement of content reflect originality, data could be protected as compilation by copyright. For Big Data, the data value exists in either (1) the content of the data itself, or (2) the process of the selection and arrangement of data. Copyright protects the ultimate shape of the above two, which is the final expression form of arrangement, instead of its content and internal logic. Therefore, copyright protection in the form of compilation work only constitutes weak protection of Big Data.⁷³

The copyright protection of data information will cause a series of problems in Big Data processing. The right holder’s authorization is needed before processing data, but diversification of data sources makes rights protection a stumbling block and generates high transaction cost. Studies suggest that a “data fence wall” which hindered the development of Bid Data has been created by intellectual property law.⁷⁴

B. Related Rights Protection Model

Related Right, also called the neighboring rights in China, links to works in copyright law and has a restricted territoriality. They are substantially different

from copyright in rights of subject, contents of rights and duration of protection.⁷⁵ It refers to exclusive rights that are enjoyed by communicators and other creators of labor achievement other than works.⁷⁶ As the 'original' standard of copyright protection is relatively high, the traditional related right come into exist in order to protect the rights of communicators such as the performers, producers of sound recordings and broadcasting organization. With the development of technology and the theory of copyright, the objects of modern related right are expanding. In addition to the rights of performers, sound recorders and broadcasting organizations mentioned above, various kinds of related right have been established in different countries, such as related right for the particular version, photos, unoriginal databases, unoriginal design of stage, etc.⁷⁷

Professor Wang Qian proposes a new type of related right to protect unoriginal databases for following reasons. First, unoriginal databases have been playing an important role in the information society. For protecting this kind of databases, however, the enthusiasm of people who invest in the production of data will be unfairly affected. Due to the lack of protection for unoriginal databases in China, if databases are commercially used without authorization, the court has to try to find even a little 'originality' in order to make databases receive protection as compiled works. This approach makes the original requirement of copyright law an empty shell.⁷⁸ Second, since related rights have covered the performers, broadcasting organizations, record producer and other investors under their wings, why cannot Big Data developers enjoy the same protection? There is no essential difference between traditional related rights owners and Big Data developers, in terms of their function of transmitting works.⁷⁹ Third, in practice, many countries have adopted related right protection model for unoriginal databases. For example, in order to implement the EU Database Directive, Germany,⁸⁰ Italy and some other European countries have adopted related rights to protect unoriginal databases which are not under the protection of copyright as compilations.⁸¹

Therefore, the author would suggest that a new type of related right, which protects Big Data developers, be added to the Chinese Copyright Law. Under the 'dual-track' protection with the different tests of originality and investment, developers could enjoy copyright and related right, respectively. More importantly, the original standard could maintain its unity to avoid the court lower the degree of protection in judicial practice.

There are, of course, some challenges on the related rights protection mode on Big Data. Some scholars suppose that unoriginal database are not protected by related rights because these are dependent on copyright; furthermore, the effect of protection would not be ideal based on the broadness and complication of data sources and data types.⁸² However, the opposite view argues that application of legal concepts should be flexible rather than mechanical.⁸³ When encountering with new issues, it is necessary to break through traditional system and reform existing legislation.

C. The Sui Generis Database Protection Model

In order to protect the substantial investment of the database producer, the EU created an independent kind of intellectual property rights, providing 15 years of special protection to the contents of the database to prevent illegal extract and reuse of all or a substantial part of the database.⁸⁴

The 1996 EU Database Directive delivered two types of protection for databases: copyright mode and special right protection (*sui generis* right), which endows the database producers' rights to prevent retrieval and/or repeated use of the all or a substantial part of database content. Article 7 of the EU Directive provides:

There has been qualitatively and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents to prevent extraction and/or re-utilization of the whole or of a substantial part, evaluated qualitatively and/or quantitatively, of the contents of that database.⁸⁵

When measuring the substantial investment, invests in the obtaining, verification or presentation of each independent databases are not included. Only the actual protection and the maintenance of the entire database are relevant factors.⁸⁶

So far, *Sui Generis* right is a new model of database protection which exists in the EU only. Theoretically, this protection endows temporary monopoly right to attract investment for stimulating the economy. However, the US refused to adopt this protection mode based on the same theory. The US Supreme Court, in *Feist*, re-examined the “sweat of the brow” or “industrious collection” standards, reiterating that as originality is a core requirement, the compilation of facts cannot

be protected by copyright based on the US Constitution which put forward the objective “in order to promote the progress of science and practical art.”⁸⁷ In a report, Ian Hargreaves points out that the growth of investment in the database in the EU is less than that of in the US in the absence of such protection.⁸⁸ The EU retained the Database Directive considering the influence to related industries, but this does not explain whether it benefits the economy of the whole society or only for a small number of stakeholders. In fact, the availability and effectiveness of the data yield positive network effect; the increase of data users will raise the value of the database.⁸⁹ This principle would also apply to data resource links. Analyzing a database combined with other databases will form a new data resource, which would increase the possibility of the repeated use of the original resources. As new type of repeated use cuts the marginal cost close to zero, sharing data resources will promote economic growth and stimulate the new pattern’s emergence, although it may sometimes hinder the traditional business model.⁹⁰

Sui Generis protection mode has been widely criticized,⁹¹ because it offers the database developers a strong monopoly which prevents the basic science research, limits the market competition of value-added products and services, and converts market barriers to insurmountable legal barriers. In the end, the special rights protection leads to rise of public product prices. This runs counter to the principle of economic efficiency which argues for low cost and incentive to provide the needed investment and service. In addition, the fifteen years’ protection is not necessary for databases in the Big Data environment which emphasizes timeliness because long protection leads to monopoly of data information.⁹²

Database forms only a small part of Big Data. The value of Big Data lies in efficient and repeated use of entire data from multiple sources, while the database right protects sample, high precision data from narrow sources.

D. The Patent Protection Model

Big data patent is essentially that of algorithm.⁹³ It is faced with three challenges. First, many algorithms are not technological creation, but simply theory or method, which cannot be the subject of the patent law.⁹⁴ Second, the algorithm patent requires intricate expression, because the essence of an algorithm is to check, calculate, filter and compress information, which makes those algorithms with slightly different form and the procedure but producing the same result, acquires

patent as well. This fully brings down the threshold of competitors entering the market. Third, the algorithm is ‘frozen’ patent, in which the claim is fixed and unable to be updated. The option to protect the updated version of algorithm patent is either writing in fuzzy which increases the risk of rejection or reapplying upon each update. This will reduce the value of the Big Data patent.⁹⁵

Anyway, because of the large size and quick update of the Big Data, relevant information doubles in every 18 months, which leads to prior art doubling every 18 months.⁹⁶ As the patent examination depends on the investigation to the existing patent rather than the actual investigation of existing technology, however, there is a large gap existing between them. It finally prevents the relevant patent protection system from adapting to the development of Big Data.⁹⁷

E. The Trade Secret Protection Model

Chinese Anti-Unfair Competition law provides:

For the purpose of this Law, ‘trade secret’ means the technology or business information unknown to the public and of commercial value for which the right holder has taken corresponding confidentiality measures.⁹⁸

Technical and business information protected by trade secrets have characteristics of secrecy, confidentiality and practicability (or business value), while Big Data values in open source, sharing and reuse, and free to use from multiple sources.⁹⁹

Therefore, using trade secret model to regulate Big Data has certain defects.¹⁰⁰ In China, as component of the Anti-Unfair Competition Law, trade secret law protect holders of trade secrets in the market competition in the form of liability mechanism rather than proprietary rights, but cannot ban legal reverse engineering. Period of protection is not ascertained before disclosed. Once disclosed, however, it will not be protected. Therefore, it is difficult for owners to guarantee the right to recover their investment.¹⁰¹

F. The Anti-Unfair Competition Law Protection Model

Anti-Unfair Competition Law is a possible approach to regulate Big Data under the circumstance that competing interests exist and the unjustified conduct causes substantial damage. In multi-filed usage of Big Data, it is hard to prove the

competition relationship. Moreover, in order to prevent information monopoly, laws do not limit market participants to gather same information. In addition, the substantial damage standard is vague. Michael Mattioli argues that there are obvious defects in using anti-competition rules to protect Big Data because there is no specific right limit rules, such as protection term, fair use and compulsory license. He says, in specific cases, it is upon the discretion of the judge to realize balance of interests, which is likely to be uncertain.¹⁰²

4. The First “Big Data” Case in China

A. Applying Unfair Competition Law to Data Information

There is precedence in applying the anti-unfair competition law to data information. In *Dazhong Dianping v. Aibang*, the Beijing No. 1 Intermediate People’s Court believes that user reviews on the Dazhong Dianping network are works of collecting, organizing, and utilizing in commercial method by the plaintiff, who therefore enjoy interests protected by law.¹⁰³ Aibang invested little but technical means to present users’ comments on its website from the plaintiff’s website. It is an act of free riding and constitutes unfair competition. User reviews displayed on the defendant’s website are material substitution, rather than technical ‘abstract,’ to the corresponding comments on the plaintiff’s website. This unreasonably damages the plaintiff’s commercial interests, and constitutes unfair competition.¹⁰⁴

B. Applying Unfair Competition Law to Big Data

On December 30, 2016, the Beijing Intellectual Property Court delivered the final judgment in *China-Weimeng v. Taoyou*,¹⁰⁵ the so-called first Big Data unfair competition case. The court rejected the appeal and sustained the original judgment that Taoyou, without users’ permission and Weibo platform’s authorization, illegally scraped and used the Weibo registered users’ information. It also illegally accessed and used the corresponding relations between Maimai registered users’ address book contacts and Weibo registered users, which constitute unfair competition.¹⁰⁶

C. Six Criteria Applied by Court

In the *China-Weimeng v. Taoyou* case, the court raises six criteria to apply Article 2 of anti-unfair competition law in the Internet industry. Among them, three criteria were established in *Shandong Food Company v. Madaqing*¹⁰⁷: (1) there is no specific rules against this kind of competition behavior; (2) the legitimate rights and interests of other operators in the competition suffered actual damage; and (3) this kind of competition behavior is unjustified because it violates the principle of good faith and the recognized business ethics.

Based on the significant differences in the forms of technology and modes of market competition between Internet industry and traditional industry, the Beijing Intellectual Property Court, in order to safeguard the development of new technology and market competition, adopts a modest judicial attitude towards the application of Article 2 of the Anti-Unfair Competition Law. In addition to the three criteria above, according to the court, following criteria shall be applied in dealing with new technologies: (4) the competitive behavior using technical means does harm the interests of consumers such as limiting independent consumer's choice and consumers' right to know, and damaging consumer's right of privacy, etc.; (5) the competitive behavior disrupts the competition order in the Internet environment, causing vicious competition or obtains this possibility; and (6) Competitive behavior on the Internet using new technology or new business models should first be presumed to be legitimate unless proved the opposite.¹⁰⁸

5. Establishing IP Protection Rules on Big Data in China

A. Legislation Aim

Through analysis of the ontology of Big Data, this article defines Big Data with its legal significance. Statically speaking, Big Data is generalization of a large and complex dataset that is difficult to be processed using existing technology. Its volume and source are different from database which has been regulated in intellectual property law. Dynamically speaking, Big Data also refers to technology and application.

Through the value analysis, we realize that there are conflicts between Big Data

and intellectual property rules, namely, data sharing principle and exclusiveness of intellectual property rights; borderless of data sharing and territoriality of intellectual property rights; data update speed and the timeliness of intellectual property, etc., Big Data and intellectual property may be integrated with proper adjustment and regulation based on the consistency of their goal of maximizing social benefits. After all, they both are driving factors of innovation.

B. Guiding Principles

Analysis of intellectual property protection models of Big Data argues for establishing and perfecting the intellectual property rights system in the era of Big Data. The following principles should be upheld in this context.

First of all, with regard to the revolutionized proposition of “creating a database right” or “data as object of intellectual property law,” this research recommends a modest and restrained approach for the following reasons. First, considering the complexity of physical level and multidimensional nature, Big Data regulation involves adjustment of many department laws. Second, Chinese academics are prudent with relevant enactment or modification of Big Data rules. For example, Zhang Xinhong, the director of research department of the National Information Center said: “For those new things without a clear understand yet, I would rather wish a slow legislation process, in case the legislation could not adapt to the future development.”¹⁰⁹ Zhang Ping, professor of Peking University also suggested: “Under such an unstoppable trend of application of Big Data, it is not urgent to define the ownership in an abstract way. Rather, establishing negative rights which do not limit the legislative usage of data might be an alternative.”¹¹⁰ Third, the modest legislative attitude is reflected in the recently issued PRC General Provisions of the Civil Law.¹¹¹ The first draft provides that intellectual property rights are the proprietary rights enjoyed by right holders in accordance with the law in respect of the following objects: (1) works; (2) patent; (3) trademark; (4) geographic identifications; (5) trade secrets; (6) layout-designs of integrated circuits; (7) New varieties of plants; (8) data information; (9) other objects specified by laws.¹¹² However, the second draft and the formal version deleted ‘data information’ as object of intellectual property. It illustrates that the nature of data and Big Data shall be further discussed.¹¹³

Secondly, lessons should be drawn from other countries or regions with regard

to the practical effect of relevant legal rules. There are different approaches across different countries in the rules of protecting databases, including copyright, related right, special rights of databases, etc. However, the strength of the protection is not proportional to the actual effect. Double-track all-round protection adopted in the EU has been criticized in its actual effect in the development of database industry. Therefore, borrowing or transplanting other countries' legal rules should uphold the prudent attitude to consider not only the legal theory but also the effect and experience.

C. Approaches of Regulating Big Data

First of all, through Big Data protection models comparison and related case analysis, this article argues that China shall adopt neither independent legislative model on data information, nor establishing an object of intellectual property on Big Data based on following reasons. (1) Various data sources and repeated uses determines that Big Data could not be regulated in a static way like other intellectual property objects such as works, inventions or trade secrets. (2) The concept of Big Data is so abroad that it is possibly protected by not only copyright, but also patent or trademark law. Constructing an independent Big Data object under intellectual property law will impact exiting forms of object as well as raise the issue of concurrence of rights. (3) Clear property right is the premise for independent protection. However, under the current stage, personal data, business data and public data in practice are indistinguishable yet. (4) Independent legal protection model conflicts the value of sharing in Big Data.

Second, this article proposes to adopt a comprehensive coordinated unified legislation model, giving full play to the regulatory role of each department law. Intellectual property law is a driving force for the development of Big Data. The absence of independent intellectual property rules on Big Data does not mean that it is not protected. Rather, due to the limited effect of the copyright law, patent law and trademark law, anti-unfair competition law comes into play. Further analysis of experience at home and abroad, such as study of the 'theft theory' or the "eight elements analysis" in cases, are of vital importance for China.

Third, the analyzing process is proposed towards different types of data. (1) Personal information should be protected by not only General Principles of Civil Law, but also specialized personal information protection law.¹¹⁴ (2) Privacy data

are mainly regulated by privacy laws; business secrecy are usually protected by trade secret laws. Data containing state secrets shall be protected by the national security laws. (3) In order to trade personal data, an anonymous processing (to privacy processing) is required. The holder of the original data and data controller (that is, the data collected through capital investment) could sign a data exchange agreement regulated by contract law. (4) Data without personality right attribute belongs to the legal controller. Data involve public interest should be shared by the public for reasonable development and use.¹¹⁵ (5) Data as the object of intellectual property rights is regulated by intellectual property law.

6. Conclusion

In order to address regulatory impracticality in the area of Big Data and encourage the disclosure of Big Data practices, this article proposes that certain statutory amendments are needed. With regard to the revolutionized proposition of “creating a database right” or “data as object of intellectual property law,” this article recommends a modest and restrained approach, in which intellectual property law and other laws shall allocate their respective roles, working together to establish the legal framework on regulating Big Data. In determining protection model, consideration should be taken on the characteristics of data structure, data form, data collection and specific circumstances in data transaction.

Intellectual property rights protection of Big Data is a complex issue. In conclusion, the following steps are proposed. First, defining Big Data in question in the legal sense should be distinguished from similar concepts such as information, knowledge, data, database and dataset to avoid confusion. Second, for original and fundamental data, open data principle is encouraged to balance the interests between data controllers and the public. Third, appropriate classification of data is the prerequisite to protect relevant intellectual property interests. Big Data in the sense of scattered data is not the object of intellectual property rights, because its value lies in exploitation and usage. By comparing different IP protection models, the author would finally recommend applying the general terms of anti-unfair competition law to deal with Big Data infringement under current circumstance.

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 63. 17 U.S.C. 102.
 64. *Id.* 103.
 65. *Id.* 101.
 66. *Id.* 101.
 67. *Id.* 103.
 68. Feist Publishing Co. v. Rural Tel. Service Co., Inc. 499 U.S. 340 (1990).
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 70. *Supra* note 68, at 361-4.
 71. Copyright, Designs and Patent Act 1988, art. 3(A) (Databases). It provides:
 - (1) In this Part “database means a collection of independent works, data or other

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- (2) For the purposes of this Part a literary work consisting of a database is original if, and only if, by reason of the selection or arrangement of the contents of the database constitutes the author's own intellectual creation.
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utility models and designs. The term ‘invention’ refers to any new technical solution relating to a product, a process or an improvement thereof.” Article 25 also lays down that “for any of the following, no patent right shall be granted: (2) rules and methods for mental activities.”

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98. PRC Anti-Unfair Competition Law 2017 Revision, art. 10(3).
99. Li, *supra* note 25, at 105.
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