

A Comparative Study on the Legal Protection for Computer Software Trade*

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I . Introduction

The development of computer software technology has posed some unique problems to the legal systems of intellectual property protection. Traditionally, patent and copyright are the standard forms of legal protection afforded to original products and inventions, under which of these systems the responsibility of software protection should fall. The complex nature of computer software has made it difficult to place it comfortably within the field of either one or the other.

It is essentially this nature of software which has presented many challenges to intellectual property law. Moreover, unlike traditional forms of technology, software has a high market value, is widely used and readily accessible, and can be easily duplicated. These characteristics make the need for an effective form of legal protection for software.¹⁾

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The direction of legal software protection in the United States is particularly important because of the size and strength of its industry. The United States presently leads the world in software production. United States firms hold about 75 percent of the world market for prepackaged software and related services.²⁾ The United States also leads the world in providing legal protection for software. As a form of protection in the United States, software patent protection is reaching predominance, because patents can protect utilitarian aspects of software whereas copyright cannot.

The other hand, the intellectual property laws in Europe and Asia recognize software as a protectable technology, but these laws in Europe and Asia are not evolved to the extent of the United States. Recently in Korea, perhaps due to the keen recognition of the importance of strong protection of software technology, the government enacted the Computer Program Protection Act, which became effective in 1987.

The question is whether copyright is an adequate form of protection for software, or whether patent rights would be more appropriate for such purposes. Currently, of the 176 countries in the world which grant patents, more than 50 allow the patenting of software to some degree. These countries include the United States, European countries, Japan and Canada.³⁾ As in the United States, the Korean Intellectual Property Office (KIPO) has also assigned patent protection to selected computer programs.

The goal of this paper is to explore the direction of international software protection laws, either copyright or patent right, by examining the current situations in the United States, European countries, Asia including Korea and the WTO/TRIPs Agreement.

1) Dennis Campbell ed., *International Intellectual Property Law : New Developments* (Chichester, John Wiley & Sons Ltd., 1995), p. 339.

2) United States Patent & Trademark Office, *PTO Notice of H'rgs on Software Patent Issues*, 58 Fed. Reg. 66347 (Dec. 1993).

3) Fenwick & West, *1994 Update: International Legal Protection for Software*, 1994, pp. 13~15.

II. Software Protection in U.S.

1. Copyrights, Patents and Software

It has been reasoned that computer programs written in code are created by bringing together pre-existing mathematical formulae and algorithms. Software is also similar to creative writing insofar as program authors generally adapt and incorporate previous technologies. However, computer programming is much more goal-directed than expressive writing, with an objective of achieving an optimal solution to a specific problem.⁴⁾

Therefore, copyright law alone may not adequately protect the technological aspect of software, where the "idea" and the "expression" are inseparable. In effect, an issue is whether or not the composition of software programs will satisfy the technological aspect of patentable inventions. Computer programs would relate more to technology than to literature. Furthermore, the research and development which goes into the creation of a computer program is more similar to that of machinery than of works of authorship.

For this reason, supporters of patent software argue that creators of innovative computer programs should be awarded patent protection to receive compensation for their huge investment of effort and money. Moreover, some argue that if technical effects are produced by the operation of a programmed computer, perhaps the effects should be protectable by patent law, while the program itself by copyright law.⁵⁾

The complicated issues today regarding the legal protection of computer software involve the proper dividing line between protectable expression and

4) Nimmer, *The Law of Computer Technology* (Boston, Research Institute of America, 1992), chap. I, p. 13.

5) Dennis Campbell, *op. cit.*, p. 344.

unprotectable ideas, and the extent to which others should be allowed to examine or duplicate elements of a program to learn such unprotectable ideas. The law must somehow determine when a programmer who achieves a close to optimal solution to a computer-related problem can have the right to prevent the subsequent use of that solution by others.

2. Copyrights

The United States courts and the Patent & Trademark Office have been extremely conservative with regard to computer-related products because of their close association with natural laws and mathematical algorithms. Copyright law, as a consequence, has been habitually applied to computer programs as the appropriate form of available protection. This application, however, has not been consistent. In many legal cases, the “idea” versus “expression” dichotomy has been confused and distorted. This is most likely due to the inseparability of the technical and literary features of software.

In the case of *Whelan v. Jaslow*,⁶⁾ the court stated that the “structure, sequence and organization” of a computer program are protectable under copyright law. In other words, the court suggested that in analysing the extent of program copyrightability, the purpose, or single “idea” of the program, should be sifted out, and all of the remaining elements are to be considered as “expression.” Hence, the *Whelan* decision, the notorious “structure, sequence and organization” doctrine, gave copyright in relation to computer programs much too broad protection. This faulty decision most likely stemmed from the unorthodox nature of computer programs which are initially perceived to be more technical than literary in nature.

Nevertheless, this case became the basis for analysing software copyright law until *Computer Associates Int’l v. Altai Inc.*⁷⁾ in 1992. In *Computer*

6) F 2d 1222 (3rd Cir. 1986), 107 S Ct 877 (1987). The defendant was accused of infringing the plaintiff’s copyrighted dental office management program, and using it to create his own competitive version.

7) No. 91-7893, 91-7985; 23 USPQ 2d 1241 (2d Cir 1992).

Associates, the courts asserted that copyright law only protected the expressive and non-functional elements of a computer program. Emphasizing that a fundamental principle of copyright law is the protection of the expression and not the idea, the court held that the literal elements⁸⁾ of a computer program were unquestionably protected by copyright. Therefore, competitors are permitted to borrow from the other functional and unprotected structures of a copyrighted program.⁹⁾

3. Patents

In the 1970s, the United States Congress appointed the Commission on New Technological Uses of Copyrighted Works (CONTU) to study the relationship between copyright and new technology, which led to the enactment of the Computer Software Copyright Act of 1980. This Act emphasized that the development of software was a “great intellectual labour” and, therefore, should be protected by law.¹⁰⁾ Some form of protection is necessary to encourage the creation and broad distribution of computer programs in a competitive market.¹¹⁾ During the 1980s, the software industry grew at an unforeseeably rapid pace, but the United States PTO (Patent & Trademark Office) never invested in the expertise and information necessary to maintain pace with the generated prior art.

In 1990, the Secretary of Commerce appointed the Advisory Committee on Patent Law Reform which presented its final report in August 1992. The Committee report suggested that patent protection should continue to be available for computer-related inventions, and no special test or

8) The literal elements of a computer program, its source code and object code, would be distinguished from the non-literal elements, such as flow charts, parameter lists and macros.

9) Goldstein & Townsend, “Intellectual Property Law Developments”, *Recent Developments in United States Intellectual Property Law* (Morrison & Foerster and Korea Invention & Patent Association, 16 Nov. 1992), p. 3.

10) Kahin, “A Policy Perspective on Software Patents, Softice Symposium '93 : The Fourth International Symposium on Legal Protection of Computer Software”, Sl-3-5 (10~11 Nov. 1994), p. 2.

11) Nimmer, *op cit.*, chap. I, p. 13.

interpretation of the law should be applied to patent applications related to computer programs.¹²⁾

In *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*,¹³⁾ the court upheld a patent claim for computer hardware and software which analysed human heart electrocardiographic signals. The analysis process, which included mathematical algorithms, transformed physical signals into electrical signals. However, regardless of the fact that the final output was a number, the patent did not claim an exclusive right to a mathematical algorithm but to the process which produced an innovative and useful output.¹⁴⁾

At the same time, in *Atari Games Corp. v. Nintendo of America, Inc.*¹⁵⁾ and *Sega v. Accolade*,¹⁶⁾ the courts addressed the question of “reverse engineering” of a computer program, decompiling object code to source code. The judicial decisions in these cases held that the decompilation of a computer program can be a fair use under section 107 of the Copyright Act, regardless of whether or not a second program was similar to the copy.

Furthermore, regarding graphical user interfaces in *Lotus Development Corp. v. Paperback Software Int'l*,¹⁷⁾ *Lotus Development Corp. v. Borland Int'l, Inc.*¹⁸⁾ and *Apple Computer Inc. v. Microsoft Corp.*¹⁹⁾, the courts not only excluded the functional elements of a graphical user interface from copyright protection, but also rejected the “look and feel” test to determine the copyrightability of graphical user interfaces.

Overall, the United States legal system during the past three decades has generally moved from a rather restrictive to a more open attitude in

12) Chisum, “Recent Developments in United States Patent Law”, *Recent Developments in United States Intellectual Property Law* (Morrison & Foerster and Korea Invention & Patent Association, 16 Nov. 1992), p. 13.

13) 958 F 2d 1053, 22 USPQ 2d 1033 (Fed. Cir. 1992).

14) Chisum, *op. cit.*, p. 13.

15) 18 USPQ 2d 1935 (ND Cal. 1991), *aff'd* 24 USPQ 2d 1015 (Fed. Cir. 1992).

16) 785 F Supp 1392 (ND Cal. 1992).

17) 740 F Supp 37 (D Mass 1990).

18) 788 F Supp 78 (D Mass 1992).

19) 799 F Supp 1006; 1992 U.S. Dist. LEXIS 12219; 24 USPQ 2d 1081.

analysing the nature of inventions which involve the use of algorithms, namely computer programs. Nonetheless, there has been considerable inconsistency in the courts' decisions related to such analysis, but the courts in very recent years have come down in favour of granting patents to innovative computer software programs.²⁰⁾

4. Influence on WTO/TRIPs

The United States legal system has given so much influence upon the Agreement on Trade-Related Aspects of Intellectual Property Rights (hereinafter the "WTO/TRIPs"), annexed by the Agreement establishing the World Trade Organization effective January 1, 1995.

The text of Article 10, paragraphs 1 to 2, of the WTO/TRIPs, clearly stipulates as follows : "1. Computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971).²¹⁾ 2. Compilations of data or other material, whether in 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." However, according to the Article 9, paragraph 2, of this Agreement, Copyright protection shall extend to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.

III. Software Protection in Europe & Japan

1. European Protection System

The European Patent Convention (EPC) has both a novelty requirement

20) Goldstein & Townsend, *op. cit.*, pp. 4~5.

21) The Berne Convention for the Protection of Literary and Artistic Works (1971).

and a non-obviousness requirement for any inventions, not unlike the law in the United States. The 1962 and 1963 drafts of the EPC contained no exclusion of computer programs. That exclusion first appeared in the second preliminary draft of the EPC in 1971.

During the 1960s and 1970s, the patent offices and courts in Europe grappled with the concept of the software patent, just as those in the United States did. It is not an easy issue, particularly when many people during that era believed that computers were simply “thinking machines.”²²⁾

A most remarkable demonstration of the difficulty this issue presents is this surprising turnabout. The German Federal Patent Courts and the United States Supreme Court came down squarely on opposite sides of whether the *Benson* invention (for converting binary coded decimal numbers to binary numbers) was patentable subject matter. The United States Supreme Court struck down the *Benson* claims as being an attempt to preempt all use of a mathematical algorithm.²³⁾ The German Federal Patent Court saw it differently and deemed the claims to be patentable subject matter.²⁴⁾ German Courts later retracted fully from the *Benson* position and began uniformly rejecting applications where the invention was characterized as an algorithm, or a calculating or organizational rule to be applied or used in known data processing equipment.²⁵⁾

The EPC statutory language seems quite clear. Computer programs are expressly excluded by Article 52(2) EPC.²⁶⁾ In the case of *Vicom*²⁷⁾, both method and apparatus claims were presented.²⁸⁾ The Examining Division of

22) Gregory A. Stobbs, *Software Patents* (John Wiley & Sons, Inc., 1995), p. 334.

23) *Gottschalk v. Benson* 409 U.S. 63 (1972).

24) Shortly, the *Benson* developed an algorithm for manipulating the digits of a binary coded decimal number (then used to light glowing filament digital displays) into binary numbers (then used, and still used, as the lifeblood number system of digital computers).

25) BCD Convention, (1973) Mitt 171, (1974) 5 IIC 211.

26) G. Gall, *1985 European Patent Office Guidelines on the Protection of Inventions Relating to Computer Programs*, 2 Computer L. & Prac., No. 1 at p. 2 (1985).

27) *Vicom/Computer-related Invention*, 2 Eur. Pat. Office Rep. 74 (1987).

28) In this case, the method claims recited a method of digitally processing images in the form of a two-dimensional data array by an operator matrix, and the apparatus claims recited an apparatus for carrying out the claimed method.

the European Patent Office (EPO) rejected the method claim as a mathematical method because the characterizing part of the claim "would only add a different mathematical concept and would not define new technical subject matter in terms of technical features."²⁹⁾ In effect, the Examining Division considered digital filtering to be a mathematical operation. There have been several EPO Board of Appeal decisions since *Vicom* that demonstrate the viability of that decision, and test its limits.

However, in 1990 the EPO Board of Appeal decided two IBM software patent applications in favor of patentability. Firstly, in *IBM/Data Processor Network*³⁰⁾ the Board of Appeal held that invention was of sufficient technical character to support patentability because the invention was concerned with the internal workings of processors and the way in which the particular application programs operate on the data. Secondly, in *IBM/Computer-related Invention*³¹⁾ the claims related to a method of decoding stored phrases and of providing a display of events in a text processing system. The Board of Appeal found that patentable subject matter was present, holding that the signaling of conditions prevailing in a processing machine was a technical problem and was therefore patentable subject matter.

The metes and bounds of the *Vicom* decision were also tested by the *Merrill Lynch Application*.³²⁾ The invention in that application was a business system for implementing an automated securities trading market. The Examining Division held the claims did not define a patentable invention because the claimed features would be present in a conventional business computer system and because they define essential functions required for the performance of a business method.

Especially in Europe, the current *EPO Guidelines* (the version of March 1985) contain several provisions regarding software inventions. One

29) *Vicom/Computer-related Invention*, 2 Eur. Pat. Office Rep. 74 at p. 78 (1987).

30) *IBM/Data Processor Network* (T6/83, Eur. Pat. Office J. 1~2, 1990).

31) *IBM/Computer-related Invention* (T115/85, Eur. Pat. Office J. 1~2, 1990).

32) *Merrill Lynch/Automated Trading System* (1989) RPC 194.

objective of the *Guidelines* is to harmonize examination practice throughout Europe, but the *Guidelines* are not binding on the Board of Appeal, which is an independent body of a judicial nature.

The following are excerpts from the *EPO Guidelines* that relate to computer programs.³³⁾ In the particular case of inventions in the computer field, program listings in programming languages cannot be relied on as the sole disclosure of the invention. The description, as in other technical fields, should be written substantially in normal language, possibly accompanied by flow diagrams or other aids to understanding, so that the invention may be understood by those skilled in the art who are deemed not to be programming specialists. Short excerpts from programs written in commonly used programming languages can be accepted if they serve to illustrate an embodiment of the invention.³⁴⁾

The Convention (EPC) does not define what is meant by “invention”, but an “invention” within the meaning of Article 52, paragraph 1, must be of both a concrete and a technical character. In considering whether or not the subject matter of an application is an invention within the meaning of Article 52, paragraph 1, there are two general points. Firstly, any exclusion from patentability under Article 52, paragraph 2 (Inventions), applies only to the extent to which the application relates to the excluded subject matter as such. Secondly, the examiner should disregard the form or kind of claim and concentrate on its content in order to identify the real contribution which the subject matter claimed. If this contribution is not of a technical character, there is no invention within the meaning of Article 52.

Similarly, if a computer program is claimed in the form of a physical record, for example of a conventional tape or disc, the contribution to the art is still no more than a computer program. If on the other, a computer program in combination with a computer causes the computer to operate in a different way from a technical point of view, the combination might be

33) Stobbs, *op. cit.*, pp. 341~342.

34) see the *EPO Guidelines* C-II, 4.14a.

patentable. A computer program claimed by itself or as a record on a carrier, is unpatentable irrespective of its content.

However, if the subject matter as claimed makes a technical contribution to the known art, patentability should not be denied merely on the ground that a computer program is involved in its implementation. This means, for example, that program-controlled machines and program-controlled manufacturing and control processes should normally be regarded as patentable subject matter. It follows also that, where the claimed subject matter is concerned only with the program-controlled internal working of a known computer, the subject matter could be patentable if it provides a technical effect. Where patentability depends on a technical effect, the claims must be so drafted as to include all the technical features of the invention which are essential for the technical effect. Where patentability is admitted then, generally speaking, product, process and use claims would be allowable.³⁵⁾

2. Japanese Protection System

The Japanese intellectual property system is significantly different from the other industrialized countries. Until recently, intellectual property in Japan has been considered more as a common good to be shared and used than as a right of exclusive possession accorded to the creator.³⁶⁾

The Japanese Patent Law provides that the purpose of the patent law is to encourage inventions by promoting their protection and utilization, to contribute to the development of industry. "Inventions" protected by the Japanese patent law are defined as "the highly advanced creations of technical ideas by which a law of nature is utilized."³⁷⁾

Especially, concerning the patentability of computer software or computer

35) see the *EPO Guidelines* C-IV, 2.

36) Peter D. Miller, "Cavalier View of Patents Erodes Incentive", *Japan Econ. Journal* 23 (Oct. 22, 1988).

37) Cary H. Sherman, *Computer Software Protection Law*, 1991 Supp. JP-31 (Japanese Patent Law, Art. 2 para. 1).

programs, the Japanese Patent Office (JPO) has put new *Guidelines* (effective July 1, 1993) in place, describing how computer software is to be viewed vis-à-vis the “law of nature” utilization requirement. Under these *Guidelines* computer software inventions are examined as follows :

“The following inventions are classified as statutory invention : (I) Inventions in which natural laws are utilized in the information processing by software : (1) Execution of control with respect to hardware resources or processing accompanying the control, or (2) Execution of information processing based on the physical or technical nature or properties of an object.³⁸⁾ (II) Inventions in which hardware resources are utilized.”

The Japanese Patent Attorneys Association (JPAA) notes that the statutory subject matter has been broadened by this *Guideline*, making it possible to patent concepts of a technical nature such as character recognition, communication format or protocol, structure of a pulse train, signal format, and so on.

These *JPO Guidelines* do not, in the JPAA’s view, open the floodgates to all types of software-implemented inventions. Inventions that are not considered to have utilized natural laws in the information processing by computer, and are also not considered to have utilized hardware resources are as follows :

“When information processing is based on mathematical methods, schemes, rules or methods for doing business or performing mental acts, and the like, and also when the limitations imposed by hardware resources in a claim correspond to an inevitable restriction (mere use of hardware resources) resulting from the use of a computer, then, ... the claimed invention is not considered to utilize natural laws.”³⁹⁾

38) The term object means that “any existing object such as a signal, character, image, picture, data, layout, pattern, shape, hardware or the like can be encompassed.”(*Questions and Answers on Japanese Patent Practice 26*, question 62, paper distributed by the JPAA (Nov. 1983).

39) *Questions and Answers on Japanese Patent Practice 26*, question 62, paper distributed by the JPAA (Nov. 1983).

The enactment in 1993 of specific *JPO Guidelines* permitting the patentability of software (if natural laws are utilized) is an interesting development in Japanese intellectual property law; but it merely represents the evolution in Japan's consistent line of thinking.

In the 1970s the Japanese Ministry of Trade and Industry (MITI) did a study of computer technology, forming a Committee to Study Legal Protection of Software, in June 1971. This Committee published an "Interim Report on the Legal Protection of Software" in May 1972, which concluded that neither the copyright nor the patent systems were suitable for software protection.⁴⁰⁾ Notwithstanding the conclusion of this Committee, MITI, in December 26, 1975, promulgated *Guidelines on the Criteria for Computer Programs as Inventions*, which authorized patents on computer programs if a "law of nature" was used. Then, in 1982, MITI again promulgated a *Guidelines* that a microcomputer that has been designed to achieve a particular purpose may be patented, and to the extent software has been developed as an integral part of the microcomputer, the software may be covered by the same patent which covers the microcomputer.⁴¹⁾ Thus the current *MITI Guidelines*, while more detailed, still apply the "law of nature utilization" test.

This is not to imply that everyone within MITI believes that the Japanese patent system is well equipped to handle software inventions. Since the 1970s MITI has vacillated on this issue. For example, in 1983 MITI recommended a *sui generis* Program Rights Law should be developed to protect software, instead of either the patent system or the copyright system. However, in this case the Ministry of Education (MOE) proposed that copyright law should be used. MITI, said to be a very powerful force within Japan, capitulated to less powerful MOE.

40) Sherman, *op. cit.*, 1991 Supp. JP-32.

41) *Ibid.*

IV. Software Protection in Korea

As the computer industry itself is relatively young in Korea, the issue of suitable legal measures for protecting software products only recently became a social concern from the early 1980s. At first, because no court precedent existed on the protectability of software, the Korean government was uncertain which form of intellectual property law was most appropriate for computer programs. Neither the Korean Copyright Act nor the Korean Patent Act specifically provided for the protection of software at the time. The government was also initially reluctant to grant strong legal protection to software, which then was mostly created by foreigners, because it feared such protection would stifle the new domestic industry with excessive legal paperwork and royalty payments.

However, also during the 1980s, the newly industrialized Korean economy was growing at an double digit rate per year. The industrialization of the economy itself became an impetus for establishing and refining intellectual property laws to promote technological development domestically. Moreover, the economic growth was largely dependent upon continuing to implement an export-oriented strategy, securing foreign investment and obtaining the transfer of advanced foreign technology.

Thus, without a legal environment which provided sufficient protection to intellectual property, more advanced countries were unwilling to make business transactions with Korea. A legal system which provided such fair and reasonable protection to high-technology inventions was indirectly necessary for the continuous development of the economy.

Considering the tremendously positive effects of computer technology on efficiency and worker productivity, the legal protection of computer-related products has become a particularly important issue. Access to high-

technology software is now indispensable for developing countries that want to compete in the international marketplace. To facilitate the procurement of this access, the Korean government from the mid-1980s has taken favourable steps toward granting stronger protection to original computer programs created by foreigners and also Korean nationals.

For example, it extended the provisions of the old Copyright Act to include coverage of software and also added a stipulation therein, stating that computer programs would be primarily protected by a completely new and separate Act specifically for computer programs.

1. The Computer Program Protection Act

The Computer Program Protection Act (CPPA), which was enacted on 31 December 1986 and became effective on 1 July 1987, serves as the principal form of legal protection in Korea for computer software.⁴²⁾ As stated in article 1 of the Act (the version of December 1998), its general purpose is to promote the growth of program-related industry and technology by protecting the rights of program authors and ensuring the fair use of computer programs. The CPPA essentially provides protection similar to that of copyright to all computer programs at the time of their creation, including derivative works which are also protected as independent programs. The programs are not required to be registered with the government to receive this protection. The rights to a computer program, which are referred to as the "program copyright" in the Act, are automatically established upon the creation of the software program. Under the CPPA, the author's program rights include the following:

- (1) The rights to reproduce, revise, translate, distribute, publish and transmit the program (Art. 8);
- (2) The right to determine whether or not to release the program (Art. 9);
- (3) The right to indicate his real name or pseudonym on the program or

⁴²⁾ Korean Legal Center, Vol. 2, p. 345.

its reproductions or releasing (Art. 10); and

(4) The right to preserve the integrity of the title, contents and form of the program, except when limited modifications are made to the program so that it can be used on a different computer or for more efficient use on a specific computer (Art. 11).⁴³⁾

In response to changing circumstances, the Korean government has been in the process of revising the CPPA in accordance with the terms of the Agreement on Trade-Related Aspects of Intellectual Property Rights (WTO/TRIPs) and international trends in the legal protection of software. Under the current CPPA, a computer program is defined as a work expressed in the form of a series of instructions or commands which are used directly or indirectly in a computer or other information processing device to obtain a specific result.⁴⁴⁾ Any original program fitting this definition will be protected under the Act.

As mentioned above, registration of a program is not required for the program to be granted protection under the CPPA. However, registration can be helpful in many cases, since it provides an official legal recording of the program's existence and history. For example, the establishment, an assignment, a transfer or an extinguishment of the program rights can only be asserted against a third party when the program has been registered.⁴⁵⁾ In addition, any infringement of a registered program copyright is presumed to have been carried out negligently.⁴⁶⁾

An author, upon submitting a copy of his program, may register the following aspects of the program within one year after its creation:

- (1) The name or title of the program;
- (2) His nationality, real name and address;
- (3) The date of creation of the program; and

43) Computer Program Protection Act, Arts. 8 to 11.

44) Computer Program Protection Act, Art. 2.

45) Computer Program Protection Act, Art. 24.

46) Computer Program Protection Act, Art. 27(2).

(4) An outline of the program.⁴⁷⁾

Programs were registered with the Ministry of Science and Technology before the end of 1995, however, the responsibility for the legal protection of computer software in Korea is currently transferred to the Ministry of Information and Communications.

Computer programs created by foreigners (including foreign corporations) are similarly protected under the CPPA when they are created by a foreign juridical person which has its principal place of business in Korea or when they are first published in Korea (including when they are first published in Korea within thirty days from the date on which it was first published abroad. Foreigners' programs are also entitled to protection in accordance with any treaties to which Korea is a signatory. At the same time, if a foreign country denies or limits full protection to a program created by a Korean citizen, the Korean government may decide to impose similar corresponding restrictions on the programs created by citizens of that foreign country.⁴⁸⁾

The CPPA includes the rules on performance of the mandatory provision under TRIPs. For example, the term of a program copyright, which was 50 years from the date of creation under the old Act, is amended to 50 years from the year-end of its public notification. Also, whereas the old Act only protected programs created after the effective date of 1987, the amended Act added retroactive protection of programs created until that effective date "as per the provisions of WTO/TRIPs ratified by Korea."⁴⁹⁾

The CPPA also provides for the criminal punishment of those who infringe a program copyright. The owner of the copyright can claim compensation for damages and demand that the infringement be ceased. The standard penal provisions for program copyright infringement are as follows:

(1) If the copyright was infringed by divulging, reproducing, adapting,

47) Computer Program Protection Act, Art. 21(1).

48) Computer Program Protection Act, Art. 3.

49) Computer Program Protection Act, Art. 8(3) and Annex 1.

translating, distributing, publishing or transmitting the program, or if the infringement occurred by importing computer programs for distribution in Korea which would have infringed a copyright had the programs been created in Korea at the time of the importation, imprisonment up to three years or a fine up to fifty million Korean Won will be imposed;

(2) If a government official discloses confidential information learned during the course of duty, imprisonment up to two years or a fine up to twenty million Korean Won will be imposed; and

(3) If the name of the inventor or title of the program has been affected without authorization, or if false facts regarding the program have been registered by a government official or private entity, imprisonment up to one year or a fine up to ten million Korean Won will be imposed.⁵⁰⁾

These fines and imprisonment terms are being enforced more strongly these days by the Ministry of Justice and the Ministry of Information and Communication. These sanctions can only be prosecuted when the owner of the program has filed a complaint demanding such sanctions.⁵¹⁾

It is also noteworthy that the provisions of the CPPA do not apply to programming languages, syntax and algorithms employed in the creation of computer programs.⁵²⁾ The Act defines these terms as follows:

(1) "Programming language" means characters, other symbols, or configurations thereof used as a means of expression of a program;

(2) "Program syntax" means the particular pre-arrangement of a special program with regard to the use of the programming language; and

(3) "Program algorithm" means a combined method of instructions or commands in a program.

Therefore, the protection afforded to computer programs under the Computer Program Protection Act (CPPA) is essentially the same as that provided to works under the Copyright Law. However, it is significant that

50) Computer Program Protection Act, Art. 34(1) to 34(3).

51) Computer Program Protection Act, Art. 36.

52) Computer Program Protection Act, Art. 4(1).

the creation of a separate law for computer programs recognizes the logical distinctions between standard works of authorship and computer programs. In Korea, the administration of general copyright law falls under the responsibility of the Ministry of Culture and Tourism, while the CPPA is enforced, in practice, by the Ministry of Justice and, according to the CPPA, by the Ministry of Information and Communication. Moreover, it is also significant that the CPPA provides a means of punishment for those who alter details relating to computer programs or those government officials who divulge confidential information learned during the course of duty.⁵³⁾

This suggests that there is a secret to be protected with regard to certain programs, or that some programs are so unique or innovative as to require this protection to safeguard their market value. According to this facts, a stronger form of legal protection may be more appropriate in some cases.

2. KIPO Guidelines of Program Inventions

As in the United States, the purpose of Korean patent law is to promote the development of technology and industry. The law defines an "invention" as "the highly advanced creation of technical ideas utilizing rules of nature" and must meet the standard requirements of novelty, non-obviousness and industrial applicability.⁵⁴⁾ From a logical viewpoint, computer programs would seem to fit this definition and meet these requirements.

The Korean Intellectual Property Office (KIPO) issued the *Guidelines for the Examination of Computer-Related Inventions* in December of 1984, before the CPPA was enacted.⁵⁵⁾ The *Guidelines* acknowledged a uniform inspection standard for such inventions. They allow the limited patentability of certain computer programs under the following definitions:

53) Computer Program Protection Act, Art. 23.

54) Korea Invention and Patent Association, *The Korean Industrial Property Law*, 1991, p. 13.

55) Korean Intellectual Property Office, *General Examination Guidelines* (Kumgang Moonhwa, 24 August, 1992), pp. 429~438.

(1) A “computer” is identified as a device able to process information, with all of the basic elements such as a central processing unit, input-output device and memory;

(2) A “computer-related invention” includes all innovations related to computer applied technology with an element of inventiveness in the programming sequence or in relation to the performing of a specific function; and

(3) A “program” is defined as the collection of commands for ordering the computer to perform a desired task.

Specifically regarding computer programs, *KIPO Guidelines* distinguish between a “process invention” and an “apparatus invention”. If the underlying sequence of the program solves a particular problem based upon laws of nature, the program is recognized as a process invention. If the program is implemented in a computer for a technical purpose, it is deemed to be an apparatus invention. According to *KIPO Guidelines*, a computer program may generally be granted a patent when it is utilized in conjunction with a machine to accomplish a useful purpose.

However, the judgment as to the validity of the patent application will be based upon the examination of the entire claims. That is, it is not only the part of the method responsible for achieving the objective which is scrutinized, but the whole method of operation is considered. Valid software inventions include those programs which solve a specific problem based on the laws of nature and those which are used within a computer apparatus or system to achieve a specific function.

Also, as in the United States, mathematical algorithms and formulations are unpatentable, because they are considered to represent the law of nature itself rather than constitute an invention based on a law of nature to achieve a special purpose.

A significant number of cases in relation to software patents in Korea are not currently available, but the legal trend has been similar to that in the United States. Korean law seems to better accommodate the unique

nature of computer programs by specifically enacting separate laws for its examination in relation to intellectual property protection.

3. The Foreign Trade Act

The Foreign Trade Act (FTA), which was enacted on 31 December 1986 and revised on 31 December 2000, added the on-line trade by computer information system to a concept of the international trade, because the on-line export and import by computer information system have been rapidly increased according to the development of information technology.

For the purpose of the FTA, a "goods and so on" includes not only movable property except a document which represents money, stocks or bonds stipulated by the Foreign Exchange Transaction Act, but also electronic and intangible property which is able to transmit, receive and save by computer information system.⁵⁶⁾

Furthermore, anybody must not act as follows: (1) to import "goods and so on infringing the intellectual property"⁵⁷⁾ or to sell in Korea the imported goods and so on infringing the intellectual property; or (2) to export "goods and so on infringing the intellectual property" or to product in Korea for the purpose of exporting the aforementioned goods and so on.⁵⁸⁾

V. Conclusion

The present has often been referred to as the "computer age". Investment in research and development is especially important in the computer field. A appropriate intellectual property protection system is necessary to foster the

56) Foreign Trade Act, Art. 2.

57) "Goods and so on infringing the intellectual property" is identified those infringing patent, utility model, industrial design, trade mark, copyright, neighbouring right, program copyright, topography of integrated circuits, geographical indication, or trade secret (Foreign Trade Act, Art. 39(1)).

58) Foreign Trade Act, Art. 39(1).

growth of the computer software industry. Therefore, the international legal system should provide an environment where innovation can flourish.

The double nature of computer software as a technological invention and a work of authorship makes it difficult to place it comfortably and exclusively within the field of either copyright law or patent law. Copyright has generally been applied to computer programs up to now. However, copyright protection alone does not seem to be adequate considering that the technical aspects of a software program, that is, the "idea" of the program, may not be protectable.

Because of the scientific research and development which goes into the creation of an original computer program, it warrants patent protection in selected situations. It should be noted that patent rights are only granted in exchange for the public disclosure of the mechanics behind the product. Thus, other researchers and developers can study its make-up and perhaps implement improvements. This is the foremost objective of intellectual property law. As computer technology is likely to be the most influential innovation of the present time, the law should provide a hospitable environment in which it can expand even more.

In the comparative judicial systems, the courts have affirmed the patentability of software, although they have been rather conservative with the actual granting of patents to computer programs. However, a rapidly increasing number of software patents have been issued recently so that we can observe an encouraging legal trend toward patent protection of software. In conclusion, this trend realizes the important relationship between software protection law and technological development, thus benefiting the greater society by promoting science and technology.

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ABSTRACT

This paper is to explore the direction of international software protection laws, either copyright or patent right, by examining the current situations in the United States, European countries, Asia including Korea and the WTO/TRIPs Agreement. According to the comparative legal systems, each court and office gives both copyrightability and patentability of software by a stronger and appropriate intellectual property protection system.

Keywords : Intellectual Property Rights, Software, Computer Program