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A NEW MEANS OF INTERNATIONAL PROTECTION OF COMPUTER PROGRAMS THROUGH THE PARIS CONVENTION—A NEW CONCEPT OF UTILITY MODEL†

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In many countries judicial judgements interpreting copyright law are providing protection for computer programs. This is true even though computer programs are often not specifically listed as protected subject matter. The United States has amended its copyright law to specifically protect computer programs.

Given the recent judicial and legislative developments, there is a tendency to conclude that computer programs are best protected using copyright law. This Article will suggest that while copyright law may be a useful tool for protecting computer programs, there are substantial problems associated with using copyright law for this purpose. One problem is that the harmony between the copyright law system and the industrial property law system will be destroyed, if computer programs are protected under copyright law. A second problem is that the duration of protection under copyright law is longer than necessary.

Under copyright law, there is no legal right which protects the use of computer programs, and the "author's moral right," covered by copyright law in many countries, can still hinder protection of computer programs. Those urging the enactment of new program protection laws, separate from copyright and industrial property law, are having difficulty finding compatibility with existing international treaties. The Ministry of International Trade and Industry (MITI) in Japan and others in Canada, France and Austria are urging such separate legal protection for computer programs.

This Article proposes a new means of international protection of computer programs within the jurisdiction of the industrial property law system. This protection system would be compatible with the existing Paris Convention.[1]

The MITI is preparing to set up a system of protection for computer programs, tentatively labeled the Program Right Law. The MITI is taking this action in response to a request by the Information Indus-

1. International Convention for the Protection of Industrial Property, *opened for signature*, Oct. 31, 1958, 13 U.S.T. 1, T.I.A.S. No. 4931, *revised*, 21 U.S.T. 1583, T.I.A.S. 6923 (1967) [hereinafter Paris Convention].

try Section of the Industrial Structure Council of the MITI. In its interim report ("MITI Interim Report"),[2] the Information Industry Section called for implementation of a program protection system. Concurrently, the Agency of Cultural Affairs (ACA) announced a proposal to amend the copyright law.[3] This proposal was based upon an interim report of the Sixth Subcommittee of the Copyright Counsel ("ACA Interim Report").[4]

While the proposals of the MITI Interim Report and the ACA Interim Report conflict, both share common problems. At present, there is no international consensus or agreement to protect computer programs[5] by new legislation. The lack of international consensus means the Program Right Law of the MITI does not provide for international compatability. Before a system of international protection for computer programs can be set up, a new treaty for such protection must be concluded. Although the MITI Interim Report states that computer program protection that lasts "as long as fifteen years is suitable"[6] it also states that "taking into consideration that the United States and some other countries grant protection of very long terms, it would be inevitable to fix a protection term with a rather long period."[7]

Under the proposed MITI Program Right Law,[8] international protection of programs is provided through the Berne Convention.[9] In order to conform with the Berne Convention, it appears the duration of protection for programs must last at least fifty years. Since MITI's program right proposes a strong form of protection, namely, the right of use, the profit to the first creator or producer of the program is protected for too long a term. This may result in furthering the oligopoly of very large enterprises.

Programming is a computer-utilizing technology, developed and used mainly in the industrial field. Due to this connection with industry, the protection of programs is more closely related to industrial

2. Information Industry Section, Ministry of International Trade & Industry, Interim Report, Tsusansho-Koho, Dec. 14, 1983 [hereinafter MITI Interim Report].

3. Agency of Cultural Affairs, Amendment to Copyright Law (Draft and Summary) [hereinafter ACA Draft].

4. Sixth Subcomm. of the Copyright Council on Computer Software, Agency of Cultural Affairs, Interim Report (Jan. 1984) [hereinafter ACA Interim Report].

5. "Computer programs" include source codes, object codes, and other types of programs, but not flow charts or documentation.

6. MITI Interim Report, *supra* note 1, at 6.

7. *Id.* at 5.

8. *Id.* The MITI Interim Report proposes the generation of program protection (program right) without any formality and announces its study of a system with a relatively long protection term.

9. Berne Convention for the Protection of Literary and Artistic Works, *opened for signature*, Sept. 9, 1886, 331 U.N.T.S. 217 [hereinafter Berne Convention].

property law than it is to copyright law. Industrial property law is designed to protect intangible industrial property. If copyright law is used to protect computer programs as advocated by the ACA, the copyright law would gradually intrude into the area of industrial property law, creating confusion within the system of intangible property law. A copyright used to protect a program is not as exclusive as a patent right or similar industrial property right, which could not be used to protect an independently created program. If a program of an industrial nature is monopolized for fifty years,[10] as proposed under the Program Right Law, the oligopolic state may be maintained for a long period.

Today, commodities, services, and information are increasingly being internationally circulated through traffic networks and communication systems. Programs are no exception to this general trend. Problems associated with the protection of programs cannot be discussed without considering international compatibility. Unfortunately conflicts of interest among countries are so severe that an international treaty regarding programs and other frontier technologies cannot realistically be concluded in the near future. As a result, international protection of programs using existing international conventions is being researched.

Typical international copyright treaties include the above-mentioned Berne Convention and the Universal Copyright Convention.[11] Industrial properties such as patents and trademarks, are typically protected by the Paris Convention. The proposed amendment of the Copyright Law by the ACA is internationally compatible with the Berne Convention.

In some developed countries there is a movement to protect programs using copyright law, but there is no international consensus for this position.[12] Other countries have used patent law to protect computer programs. In 1975 Japan's Patent Office established The Examination Standard on Invention Regarding Computer Programs (Part 1), and in 1982 issued The Guidance for Application in Examination of Invention Regarding the Application Technologies of Microcomputers. These examination standards and guidelines are flexible interpretations of the patent law. Practitioners feel that ideas and concepts in the area of computer programs are protected fairly broadly under the patent

10. Even for works made for hire (works made in the name of a corporation), the term of protection is for 50 years after publication or creation. COPYRIGHT LAW OF JAPAN art. 53.

11. Universal Copyright Convention, Sept. 6, 1952, 6 U.S.T. 2731, T.I.A.S. No. 3324.

12. Ozawa, *Report on WIPO Experts Meeting on Legal Protection of Computer Software*, 33 TOKKYO KANRI (Patent Management) 1191 (1983).

law.[13] In the 1970's only England, Japan and a few other countries protected program-related inventions by patent law on a relatively wide scale. Early in the 1980's, the United States, France, and some other countries provided such protection. Further movement in this direction is likely to continue in the future.[14]

Patent protection for computer programs presents problems, many of which are administrative. Two problems are the excessive length of time required for the examination term and the difficulty in finding examiners skilled in the art. The problems associated with using patent law to protect computer programs are not insurmountable.[15] The protection of computer programs basically conforms with the patent system.[16] Why is the Paris Convention not included as part of international protection of programs, given that it has more member countries than the Berne Convention? Our discussion starts with this question.

I. ESSENTIAL NATURE OF COMPUTER PROGRAMS AND IDENTIFICATION OF PROBLEMS

A. CONCEPT OF SOFTWARE

Software is understood by those in the industry to include not only the actual program (including source and object codes), consisting of instructions which direct the computer to accomplish a desired result, but also the ideas, concepts, and algorithm (hereinafter referred to as underlying technical concept) which form the foundation for the program. Flow charts which diagram the program flow, manuals prepared for the operation and explanation of the program, and other documents are included in software.[17]

The most suitable form of legal protection for the underlying technical concept can be found in the patent system which combines disclosure of the underlying technical concept with the grant of an exclusive

13. Ozawa, *Protection of Right for Industrial Use Becomes Important*, HATSUMEI, June 1983, at 26.

14. Becker, *Protection of Software Obtainable in the USA*, 35(*9*) PAT. 70 (1982); Beresford, *Patentability of Computer Programs in England*, 36(*1*) PAT. 37 (1983); Lecca, *Legal Protection of Software in France*, 36(*10*) PAT. 8 (1983).

15. Honjo, *Limit of Protection of Computer Software by the Copyright Law*, 37(*2*) PAT. 121 (1984).

16. INTERNATIONAL BUREAU OF THE WORLD INTELLECTUAL PROPERTY ORGANIZATION, MODEL PROVISIONS ON THE PROTECTION OF COMPUTER SOFTWARE 4, Publication 814(E) (1978) [hereinafter MODEL PROVISIONS]; Handa, *Computer Program and Copyright Law*, 30 HOGAKU KYOSHITSU 70 (1983).

17. *See* MODEL PROVISIONS, *supra* note 16; MITI Interim Report, *supra* note 2, at 4; ACA Interim Report, *supra* note 4, at 4; Monya, *Protection of Computer Software*, 55 HORITSU JIHO 15 (1983).

right in the concept. This form of protection is suitable because it is difficult to keep the underlying technical concept secret for the length of time necessary to recoup fixed costs. Without such protection, inventors may lose their incentive to create. Disclosure of the underlying technical concept accelerates the creation and development of improved technical concepts. While the patent system can be used to protect the technical concept, such use has been limited. The reasons for the limited use of patent protection are not clear. Further studies on the use of patent protection must be continued based on social demand.

Underlying technical concepts are also protected under trade secret law (in the United States) and contract law. Protection of underlying technical concepts by copyright law is contrary to the spirit of copyright law, and such proposals should not be seriously considered. Protection for underlying technical concepts should be provided under patent law.

Another important problem is the protection of computer programs as a series of instructions that direct operation of computers. This is recognized by many authors who advocate legal protection of programs.[18]

B. Approach for the Legal Protection of Programs

Two main approaches are considered for legal protection of computer programs:

(1) using the existing legal system (including amendments); and

(2) using new legislation that is independent of existing copyright, patent, trade secret, unfair competition, or contract law.

Approach (1), using the existing legal system, can be further classified as follows:

(a) approaches based on patent law;

(b) approaches based on copyright law; and

(c) approaches based on unfair competition law, trade secrets, and contracts.

The current proposal for the amendment of the Copyright Law by the ACA is an international example of approach (1). Galbi's proposal[19], the interim report of the Investigation Committee of the Legal Protection of Software in the MITI[20], and the *Model Provisions on the Protection of Computer Software* by WIPO[21] are examples of new legislation for programs protection approach (2). The current proposal of

18. MITI Interim Report, *supra* note 2, at 4; ACA Interim report, *supra* note 4.

19. Galbi, *Proposal for New Legislation to Protect Computer Programming*, 17 BULL. COPYRIGHT SOC'Y 280 (1970).

20. Tsusansho-Koho, June 5, 1972; Tsusansho-Koho Aug. 10, 1972; Tsusansho-Koho, Aug. 12, 1972; Tsusansho-Koho, Aug. 22, 1972; Tsusansho-Koho Aug. 24, 1972.

21. Tsusansho-Koho, Aug. 12, 1972; Tsusansho-Koho Aug. 24, 1972.

the MITI for the Program Right Law is another example of new legislation for program protection.

C. Approaches Based on Copyright Law

Some problems regarding protection of programs under patent law have already been pointed out. Protection of programs through unfair competition law, trade secret law, and contract law is problematic. Under trade secret law, protection is conditioned on the program remaining secret. Under contract law, third party use is not restrained.[22] Some say that these laws do not provide sufficient protection for programs. Although the World Intellectual Property Organization (WIPO) announced model provisions in 1978, new legislation for the protection of programs has not yet been enacted in any country, probably because of associated political and social difficulties. Copyright law is often cited as the most suitable form of legal protection of programs. In Japan, district court cases have allowed copyright protection for computer programs.[23] Similar protection has been afforded programs in other countries.[24] It must be recognized that reliance upon copyright law because there is no other suitable system, is quite different from dealing with the problem of program protection through legislation by amendment of the copyright law.

In discussions of the legal protection of programs, why is copyright law brought to the fore? Consider the following:

(1) Because a program consists of a series of instructions, it can be viewed as an expression, that is, as an author's work. In Japan, a program is interpreted as a "scientific work" within the definition of a work in article 2 of the Copyright Law.[25]

(2) The concept of "copying" used in copyright law can be extended to include storing of the program in ROM or on a magnetic disk.

(3) Discussion of international protection of programs often centers on the Berne Convention, the Universal Copyright Convention, and copyright laws present in member countries.

(4) Formalities associated with copyright protection vary. Some countries require notice.

There are several questions associated with using copyright law to protect computer programs. Is it appropriate to characterize programs

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22. Becker, *supra* note 14, at 70; Monya, *supra* note 17, at 15.

23. Sho 54 (wa) No. 10867 (Tokyo Dist. Ct. Dec. 6, 1982); Sho 54 (wa) No. 1489 (Yokohama Dist. Ct. Mar. 30, 1983); Sho 57 (wa) No. 4419 (Osaka Dist. Ct. Jan. 26, 1984).

24. Doi, *Court Decisions on Computer Programs (I)*, 27 AIPPI 6 (1982), 29 AIPPI 2 (1984); Heidrich, *Copyright Protection of Computer Programs under German Laws*, 28 AIPPI 13 (1983); Lecca, *supra* note 14. (All of these cases refer to video games).

25. ACA Interim Report, *supra* note 4, at 32.

as literary or artistic works? Is it appropriate to protect programs under copyright law without amending the international conventions and treaties? Should some formality be required to protect programs through copyright law, viewed from a social benefit perspective as well as from a technological development perspective? In order to clarify these questions, the characteristics of programs must be considered.

D. ESSENTIAL CHARACTERISTICS OF PROGRAMS

A program is a series of instructions which direct the operation of a computer. The purpose of a program is to carry out a desired function in a computer. Two problems arise from copyrighting computer programs. One is the problem of protecting programs which operate computers. The other is whether the program, which is stored in or output from a computer memory, is a "reproduction" as defined under copyright law. These two problems should not be confused.[26]

Authors' works embody their expressions of thought and sentiment. These works convey the authors' ideas and feelings, and appeal to others with similar ideas and feelings. This explains why copyright protection[27] is not applicable to the mere fact works that do not embody human expression. A program is an assembly of commands used to operate a computer; it is not designed to appeal to human beings. A program is not intended to invoke appreciation and is not a vehicle for the expression of human ideas and feelings. A program is more like a fact work than it is like an author's expressive work. Focusing only on the physical data stored in magnetic tape, the semiconductor memory, or on paper makes computer programs look like machine operations. This should not be confused with an assembly of data in a fixed medium, such as a movie or music.[28]

It must be recognized that a computer program is intended for practical use. The value of a program is generally measured from the viewpoints of usefulness and serviceability, that is the ability to control a computer in high-speed operation, to deal with large amounts of information and to provide complex control. In contrast, fixed works rarely are evaluated from the viewpoints of usefulness, serviceability, or utilitarian efficiency.

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26. Nakayama, *Computer Software and the Copyright Law*, 788 JURIST, Nov. 15, 1982, at 41. *See*, WORLD INTELLECTUAL PROPERTY ORGANIZATION & UNESCO, RECOMMENDATIONS FOR SETTLEMENT OF COPYRIGHT PROBLEMS ARISING FROM THE USE OF COMPUTER SYSTEMS FOR ACCESS TO OR THE CREATION OF WORKS (1982) (discussing the reproduction problem).

27. COPYRIGHT LAW OF JAPAN art. 7(2).

28. *See*, Gever's Application, 1970 R.P.C. 91; NAT'L COMM'N ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, FINAL REPORT (1979) (Hersey, Comm'r, dissenting) *in* 36(*3*) PAT. 102 (1983).

As with other forms of technological progress, new computer programs are developed through accumulation or integration of improvements based upon the original program. A new program can also be made combining existing programs. New programming techniques or algorithms are generally improved forms of existing ones.

Reading an existing program and extracting an algorithm to make a new, related program is not easy. Some claim that it would be more economical to make a new program without referring to the existing one. This argument does not account for programming knowledge improvement based upon prior programs. If a guide or a manual is available for an existing program, the program could be easily, and therefore economically, read.

This characteristic of programs is different from literary or artistic works. An author's work is original and essentially independent of other works. Certainly, the sketching technique used in paintings and the logic of scientific works may be acquired or accumulated, but it is not the work that is accumulated. Rather, it is the technique or logic underlying the work. Adaptations or edited works are made using existing works. There is no evidence that the accumulation of improvements to existing works in society produces better works. Authors make improvements in expression only at the polishing and revising stage of writing.

The characteristics of a program which operates computers are the same as those of industrial creations protected by the industrial property law system. Although inventions, utility models, and other creations protected by property law are said to constitute underlying technical concepts rather than designs to directly operate computers, they do provide a fundamental way of thinking about computer operation. Inventions and utility models are intended for practical use and any usefulness must be demonstrated before they may be patented or registered.[29] Because inventions and utility models are technologies which progress through the accumulation of improvements, the patent and the utility model law enforce disclosure of these industrial creations. The purpose of patent and utility model law is to promote the circulation and development of technology through such disclosure.[30]

It makes intuitive sense that programs have the same characteristics as inventions and utility models. This is because a program is reduced from an underlying technical concept which is protected by the patent and industrial property law. Certainly, programs, like those for

29. For instance, in the specification, a description of the effect of the invention or the utility model is required. PATENT LAW OF JAPAN art. 36(4). In a patent for a substance a description on use of the substance is required.

30. *Id.* art. 1.

calculation, include mathematical algorithms which are not the subject matter of patent law protection, but any program is meaningless independent of hardware. For example, even program languages depend upon computer architecture; the language would be valueless if separated from the architecture. The development of computers can be seen as the development of new program languages. Programs are inseparable from computer technologies (including computer structures and underlying technical concepts). We should not forget the real nature of programs by overemphasizing the fact that programs are "written."

The object which should be legally protected is not the expression of programs, but their substance, i.e., the assembly of a sequence of commands or instructions. It is clear that programs, whether written on paper, stored in ROM or on a floppy disk, temporarily stored in the internal memory of a computer, or written in a high-level or machine language, should be understood to be identical, to the extent that each constitutes the substance of a program to be protected.

E. Problems with Copyright Protection

The problems of protecting programs by copyright law are now clear. Intellectual creations which are fundamentally the same as inventions and utility models are most suitably protected under the industrial property law system. If the copyright laws are amended to protect programs, copyright protection will cross into the territory of the industrial property law. This will result in heterogeneity within the protective territory of the industrial property law system. This result is undesirable for both systems. The copyright and industrial property laws systems can coexist only by appropriately and clearly defining their respective territories and roles.

The problems of protecting programs by copyright become critical with respect to the duration of protection, or "protective term." Like article 7(1) of the Berne Convention,[31] article 51 of the Copyright Law of Japan stipulates that the protective term of the copyright is fifty years after the death of the author. This term of fifty years after the death of the author represents a compromise between the author's right and society's interest in receiving the free use of works. Specifically, because a work may not become profitable during an author's lifetime, it is appropriate that the term for which the authors and their successors retain an interest in the work be based upon the average survival term of the authors' direct descendants for three generations. On the other hand, works are always created originally and independently. Their protective scope should not extend beyond the expression within

31. Berne Convention, *supra* note 9.

the work. The protective term then is based on the expectation that even this long a term will not disturb cultural development.[32] It is ridiculous to base the protective term of programs on such a concept.

As an exception to the principle of counting years after the death of the author, the Copyright Law in Japan provides protection for fifty years after the publication or creation of anonymous or pseudonymous works.[33] This is too long for program protection.

The valid term of a copyright in the United States is fifty years after the author's death[34] for anonymous works and pseudonymous works; for works made for hire, the term is seventy-five years after the year of the first publication or one hundred years after the year of creation.[35] In the United States, copyright law was amended in 1980 to protect computer programs.[36] This resulted in a surprisingly long protective term. Under the industrial property law system, the protective term covering inventions, utility models and industrial creations ranges from three to twenty years. Although this protective term should be determined by balancing the inventor interest with social interests, the basic concept is different than copyright law and the protective term is substantially shorter. The philosophy behind the protective term provided by the industrial property laws system is appropriate for programs.

One of the advantages of protecting programs under copyright law is international compatibility with the Berne Convention. The protective term in the Berne Convention is fifty years. If the protective term of programs were shortened, the Berne Convention would have to be revised. This is equivalent to concluding a new international treaty for the protection of programs and would involve similar or perhaps greater difficulty.[37] For photographic works of applied art, the Berne Convention leaves the determination of the protection period to the member countries, but stipulates that at least twenty-five years should be granted as a compromise to adjust for differences among the member countries.[38]

Copyright protection for computer programs is defective because it does not apply to the "use" of programs to operate computers. It is es-

32. WORLD INTELLECTUAL PROPERTY ORGANIZATION, GUIDE TO THE BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC WORKS 51 (T. Kurokawa trans.).

33. COPYRIGHT LAW OF JAPAN art. 7(2)-(3).

34. 17 U.S.C. § 302(a) (1982).

35. *Id.* § 307(c).

36. Act of Dec. 12, 1980, Pub. L. No. 96-517 § 10, 94 Stat. 3015, 3028 (amending 17 U.S.C. § 101 (1976)).

37. Revision of the Berne Convention except the articles on administration requires unanimous approval. Berne Convention, *supra* note 9, art. 27.

38. *Id.* art. 7(4).

sential that the "use" of the program be legally protected. The substance of a program which should be protected is a sequence of commands or instructions intended to operate a computer. The Model Provisions of WIPO and the MITI Interim Report begin with this in mind. Because programs are dealt with as "expressions," copyright protection is applicable only to program reproduction. This is the natural conclusion and limits the consideration of programs as "expressions."[39]

II. NEW UTILITY MODEL RIGHT FOR PROGRAM PROTECTION

A. PROBLEMS WITH PATENT LAWS

Patent protection for computer programs presents several problems. Let us first examine whether such problems are really peculiar to the patent system or apply also to the entire industrial property law system. The problems are as follows:[40]

(1) An algorithm is not protectable under the patent laws.

(2) Article 52 2(C) of the European Patent Convention (EPC) excludes "programs for computers" from protection by patents, and the member states of EPC also rule that "programs as such" are nonpatentable inventions.[41]

(3) Since the granting of a patent requires disclosure of the program, the disclosure may be disadvantageous to the owner of the patent.

(4) Conditions of patentability are very strict and there are not many programs which are nonobvious.

(5) Examination of programs is difficult.

(6) Since the examination takes a considerable period of time, by the time a patent is granted, the program is likely obsolete.

(7) Although a program is usually updated through enhancements, it is not easy to file a patent for the change.

In Japan, computer algorithms are protected by patent law; therefore, point (1) is erroneous. Most of the algorithms which cannot be protected under the patent law are the algorithms to which exclusive rights should not be granted (for instance, mathematical algorithms) and this is not a problem associated only with patent law. Further study is necessary to determine what kinds of algorithms should receive patent protection.

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39. ACA Draft, *supra* note 3. The Cultural Agency intended to deem use of a program an infringement of copyright under specified conditions. *Id.* art. 113(1).

40. Tsusansho-Koho, No. 10182; MODEL PROVISIONS, *supra* note 16; Monya, *supra* note 17.

41. Convention on the Grant of European Patents (European Patent Convention), Oct. 5, 1973.

EPC article 52 2(C) explicitly denies patentability of programs.[42] This results from a compromise among different governments' opinions, the difficulty of examination, and differing levels of legal stability. This ruling is not based on the idea that a program cannot intrinsically be the object of patent protection.[43]

EPC article 52 2(C) could be deleted from future consideration of the intrinsic nature of patent law subject matter. Only patent law excludes programs from the scope of protection in the contracting countries of EPC. Program protection is generally not excluded from other industrial property protection rights. Therefore, point (2) is not a problem for industrial property protection.

The system of industrial property law contains a general requirement of disclosure. This is because the system is designed to accelerate new technical creations based on the disclosed technology. That patent laws and utility model laws grant an absolute exclusive right in return for public disclosure is fundamental to the industrial property law system. This rule of disclosure should also be required for protection of programs. Under the industrial property law system, there are some exceptions to the disclosure rule, such as the secret design system in Japan. For particular programs, applications of such exceptions may be possible. There are caveats in the United States, Argentina, Bolivia, and Chile for a year, renewable for another year; in Guatemala for six months, renewable for another six months; in Brazil, Canada, and Peru for a year only; and in Honduras for an unlimited term.[44] It follows that point (3) is not conclusive either.

Only novel programs should be protected. There may be no need to protect known programs. Accordingly, point (4) is a problem of degree of nonobviousness. The industrial property right system does not necessarily require a high degree of nonobviousness for protection. Patent laws and utility model laws require novelty.[45]

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42. *Id.*

43. M. VAN EMPEL, THE GRANTING OF EUROPEAN PATENTS 32-35 (1975).

44. For a discussion of countries which do not require publication for defense and national security inventions see S.P. LADAS, THE INTERNATIONAL PROTECTION OF INDUSTRIAL PROPERTY (1930) 21, 330, 378 (Moritani trans. 1980).

45. The countries and international organizations which have registration of utility models (utility certificate of France and petit patent of Australia are inclusive) are Japan, Taiwan, Korea, the Philippines, Morocco (Tangier district), West Germany, Italy, Poland, Portugal, Spain, Mexico, Chile, France, Brazil, The African Industrial Property Organization (OpI) and Australia.

In addition the following six countries do not require obviousness as a condition for registration: West Germany, Poland, Spain, Brazil, Africa and Australia. AIPPI-JAPAN, FOREIGN INDUSTRIAL PROPERTY LAWS.

The following nine countries issue utility model rights without substantive examination: West Germany, Morocco, Portugal, Spain, Chile, France, Africa, and Australia.

Both the problem of difficulty in examination (point 5) and the problem of extended duration of examination (point 6) are administrative problems. These are not intrinsic defects of the patent systems and utility model systems because not all systems require examinations.

Any concern about the difficulty of filing for patents on improvements (point 7) is meritless. Both the patent system and the utility system are designed to encourage improvements. The application requirement is necessary and expected; it does not discourage improvements on existing inventions.

The problems underlying patent protection for programs are not intrinsic defects of the industrial property law system. Consideration of the characteristics of programs and the problems of copyright law suggest that the industrial property right system is the most appropriate system for program protection.

B. Fundamental Characteristics of Industrial Property Rights

The Paris Convention defines the scope of industrial property protection:

> The scope of the protection of industrial property includes patents, utility models, industrial designs and models, trade marks, commercial names and indications of origin, or applications of origin, as well as the repression of unfair competition.[46]

What characteristics of the patent right and utility model right are important for program protection? Unfair competition law relates to program protection, but it will not be discussed because the fundamental characteristics of unfair competition law differ considerably from patent and utility model law.

The industrial property right system, including the patent and utility model, stipulates disclosure of technology as a condition for granting an exclusive right. The disclosure of technology is important for the acceleration of new technology and improvements. Giving innovators exclusive rights in their works protects the technology and encourages further inventions. These two elements, the disclosure and the exclusive right, work together to achieve the ultimate objective of industrial development.

In an industrial property right system, rights are granted subject to certain formalities. These formalities, including application procedures

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AIPPI-Japan, Manual for the Handling of Applications for Patents, Design and Trademarks Throughout the World. Under the unrevised Patent Act of the United Kingdom, nonobviousness (inventive step) was not examined in the ordinary examination. Before France revised its patent law, it did not require a substantive examination.

46. Paris Convention, *supra* note 1, art. 1(2).

and registration, secure the development of industry and technology. These formalities also clarify the scope of the inventor's right. Clarification of the inventors' rights is indispensable to ensure compliance with the industrial property law rules. Clarification also helps avoid infringement of others' rights.

An industrial property right generally lasts from three to twenty years. Short protection periods ensure that inventions will quickly enter the public domain, contributing to industrial development. Short protection terms are important because computer technology quickly becomes obsolete. To encourage innovation, developers must be able to get a return on their investments before the technology become obsolete. The length of protection terms defines the technology's useful life for depreciation purposes. Therefore, a short protection term enables developers to recoup their costs as quickly as the technology becomes obsolete.

Industrial property rights are fundamentally different from copyright rights. Under copyright law authors have control over when their work is made public. Other differences include the absence of formalities and the longer protection period under copyright law. Programs are similar to invention and utility models and are developed and used mainly in the industrial field. This similarity suggests that programs should be protected under industrial property law.

C. UTILITY MODEL RIGHT AS AN INDUSTRIAL PROPERTY RIGHT

Industrial property rights are often protected in the form of utility models and petit patents. West Germany has a utility model and France has a utility certificate.[47] Other European countries (Italy, Spain, Portugal, and Poland) as well as countries outside Europe (Mexico, Chile, Brazil, African Industrial Property Organization, Morocco, the Philippines, Korea, and Taiwan) also have a utility model system. Australia uses a petit patent. Among the sixteen countries having a utility model system, the utility certificate system or the petit patent system, there are nine non-examination countries. Six countries allow conversion from patent. Eight countries limit protection to furniture, tools, machines, or their structure, arrangement or shape. Two countries (France and Australia) protect methods.

The utility model of West Germany requires a spatial configuration for the object of protection. The utility certificate of France is not limited to configuration and methods are also protected. Australia provides petit patent protection; subject matter is not limited. Industrial prop-

47. The utility certificate of France is ruled by the patent law. The object of protection section of the utility certificate excludes the conditions for registration of the patent. PATENTS ACT OF FRANCE arts. 3 (3), 6(2).

erty rights include those rights (not part of the classic utility model concept) which require a special configuration, shape or structure. These utility models, utility certificates, and petit patents are recognized as an auxiliary protection system for nonpatentable inventions. This system provides speedy protection before a patent is granted, and the protection is easier to obtain because of the liberal examination, or non-examination, system.

III. PROGRAM UTILITY MODEL

A. INTRODUCTION OF PROGRAM UTILITY MODEL

The technical concept underlying a program can be protected under patent law as an invention. Though capable of protecting the underlying technical concept of programs, patent law is not necessarily suitable for protecting programs. This is because it is meaningless to describe a claim under conventional patent law without abstracting the technical concept behind a long description of the program. Patent law requires a high level of invention. The EPC and its member states exclude programs from the protection of patent law.[48]

The legal protection of programs is fundamentally a problem of the industrial property right system. There are some programs which cannot receive adequate protection under patent law and there are many utility model systems which vary in the scope of protection provided. When these two factors are considered, we can define protection for programs as an entity of a modern utility model. Because the program is a utility matter within computer technology, as opposed to a creation of a fundamentally technical concept, let us provisionally call it a "program utility model."

Labeling the program as a "utility model" is not important. The program may be labeled as a "utility certificate," "petit patent," or a "utility model patent." It is possible that the Program Right Law proposed by the MITI, or other similar proposals, could be included in this concept. In summary, the program utility model could be combined with the concept of a utility model, as used in the Paris Convention,

48. Explicit exclusion of programs from protection in major West European countries is based on the fact that the states of the European Economic Community adopted a resolution to adapt their national patent law to conform with the EPC, the Community Patent Convention and the Patent Cooperation treaty (adopted during the Luxemburg Conference, Dec. 15, 1975), M. SINGER, THE NEW EUROPEAN PATENT SYSTEM 11 (D. J. Devons trans.).

Though it is not clear whether the resolution includes patents and utility models, the above-mentioned resolution does not directly exclude the utility model of the contracting states of the EPC. Therefore, despite the revision of patent law for the adaptation to the EPC, we should consider that the utility model right or the like industrial property right other than the patent right does not explicitly exclude programs from protection.

without any modification. This is in accord with the Paris Convention.[49] Special arrangements for programs can be made to correspond with article 19 of the Paris Convention.[50] Since article 1 of the Paris Convention provides that the term "industrial property" should be defined broadly,[51] there is no basis for assuming that programs cannot be proper subject matter. An assumption that programs cannot be protected would be contrary to the spirit of the Paris Convention. The above-mentioned articles of the Paris Convention do not include restrictive definitions of industrial property rights. If a country intends to protect programs under a utility model, international protection of programs will be available because the necessary body of law is already in place. As a result, strong international protection of programs, similar to the patent right, may be obtained.

B. FRAMEWORK OF THE SYSTEM (FORMALITIES)

The program utility model should protect the program, including both source code and object code. This new model includes programs within the subject matter of the industrial property system. Under this new system, program protection involves some of the aspects of industrial property law, including disclosure of the technology in return for the granting of an exclusive right, and formalities of application and registration.

The framework of the program utility model is as follows:

Application
(Follows a certain formality
and includes official fee)
↓
Formality Examination
(No substantive examination)
↓
Publication
(Alternative disclosure)
↓
Registration
↓
Annuity Tax Payment

The formality examination is necessary to determine whether program protection should issue. The lack of a substantive examination will assure quick protection for the program. The program should be dis-

49. Paris Convention, *supra* note 1, arts. 1-5 (4th Addendum), arts. 11-12.
50. *Id.* art. 19.
51. *Id.* art. 1.

closed in such a manner that a third party could easily grasp the concept of the program.

The application should list the following: the proprietor's (or creator's) name, the program title, the program list, the claimed scope of the protection, and a brief description of contents or summary of the program. Depending on the case, it may be preferable to add an auxiliary or supplemental flow chart for illustration. In place of the program list in the application, filing by magnetic media might be considered. Since the proposed right is an industrial property right, it must be published. The contents to be published are: the name of the right proprietor (creator), the title of the program, and the claim and abstract of the program.

Applications will be registered after passing a formality examination and paying the official fee. Program protection will be issued by registration. Existing formalities of the patent office will be used for registration. In most countries, an annuity tax is paid for retention of a patent. Payment of annuity taxes should continue under this new form of protection.

C. Substantive Conditions for Protection: Scope of Protection

Protection for programs must depend on novelty, regardless of economic value. Nonobviousness might also be considered. In the proposed system, a substantive examination is omitted in order to provide early registration for programs. The right provided under the proposed system is no more stable than the right provided under patent law.

Introduction of a claim system may help clarify the scope of protection. Under the claim system of conventional patent law, the scope of protection is defined by an ordinary sentence. For programs, it may be sufficient to designate the selected part of the program on which protection is claimed, since the object of protection under the program utility model is not the underlying technical concept but the program itself. This selected part may be considered a unit of the program for achieving a single function. The functions may be grasped on a concrete level, or alternatively, at a level of higher abstraction.

The following may be considered as a claim system for clarifying the scope of protection.

(1) While the application is pending, the applicant can clearly indicate the portions on which protection is claimed. Applicants can claim a right for each of the indicated portions. It is possible to claim protection for plural portions (the portions of programs which partly overlap each other) of a program. When protection is claimed for a portion of the program, the existence of such protection is presumed.

(2) If it is unclear which portions of the program are covered by

the claim for protection, it is presumed that protection on the entire program is claimed. Under this system, the scope of protection is defined solely by the claim. The object of an application may be the entire program or merely a sub-routine of the program.

D. Alternative Disclosure

The proposed system would be part of the industrial property right system and generally would require that the program be disclosed in return for the grant of protection. When a program is fully disclosed to the public, there is a potential for imitation by a third party, notwithstanding possible substantial expense and time required for developing the imitation. It may be useful to keep details of the claim secret for a certain period. This withholding is called "alternative disclosure."

Alternative disclosure enables the applicant to elect whether or not to disclose the entire content of the program. Exclusive protection is granted if the program is fully disclosed; if only part of the program is disclosed, more limited protection is granted. This limited protection may be enforceable only subject to proof of imitation. Protection may also be limited to a claim for damage or a royalty.

The applicant may, within limits, select when the program will be disclosed. Until that time, applicants are able to claim protection only when they disclose the entire contents.

E. Term of Protection

The term of protection in the proposed system, like the terms under the utility model, utility certificate, and petit patent systems is set to compliment the patent system and should not be longer than the term under patent protection. In Japan, the term of protection of the utility model, which is registered only after strict substantive examination, is ten years from the second publication. Under the proposed program utility model, protection would be granted without a substantive examination. The term should be equal to, or less than, the term when such an examination is performed. Due to the high speed of program development and shortness of a program's commercial life, the term of protection provided under the program utility model should be, at most, about ten years from the application date. Since program protection is an industrial property right, the appropriate protection term should be five to fifteen years from publication.

F. Substance of Protection

Since the proposed system falls within the industrial property right system, the protection should include a right to use similar to the right provided under the conventional patent or utility model systems. When

copyright law is used to protect programs, the following must be determined: whether an object code program based on a source program is a copy, whether a program recorded on a magnetic recording medium or a ROM is a copy, or whether intentional use of an unauthorized program in a computer constitutes a copyright violation.[52] In the proposed system there is no need to define concepts such as "copying." As a general rule, programs written on paper, programs stored in ROM or on floppy disks, programs temporarily stored in an internal memory of a computer, as well as programs written in high level and machine language, can all be treated the same. The definition of use under patent law can be incorporated into the proposed system. For instance, storing a program in a recording medium constitutes manufacturing (producing) and running the program in a computer constitutes use.

G. Relation to Other Industrial Property Rights and Conversion of Application

There may be a conflict between patent rights and the rights granted under the proposed system. Under patent law the subject matter of protection is the underlying technical concepts on which programs are based. Under the proposed system, which compliments patent law, protection covers the actual program which is derived from the underlying technical concept. When any conflict between patent law and the proposed law arises, patent law should have priority.

It is practical to permit conversion of an ordinary patent application or an ordinary utility application into this proposed system. Before conversion would be allowed the patent application or the utility model application would have to contain the disclosures required under the proposed system.

H. Application of Partition

Programs are frequently changed to solve problems uncovered after production. When the improved program is significantly different than the original program, additional protection should be granted. A system of applications for additional protection, similar to the system used under patent law, may be included in the proposed law. Under such a system of application for additional protection, requirements should be eased, for example, by reducing application fees or annuity taxes.

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52. *See* ACA Interim Report, *supra* note 4.

I. NULLIFICATION, CANCELLATION, JUDGING OF SCOPE, OFFICIAL ARBITRATION

Under an industrial property right system, nullification trials, cancellation trials, official opinions on scope of protection, and official arbitrations are provided. These proceedings, either in current form or with necessary modifications, could be applied to the proposed system. Nullification trials and cancellation trials may be necessary to test the validity of the registration. Registration by an unauthorized party or accidental double registration for protection on the same subject matter may trigger these trials.

J. INTERNATIONAL PROTECTION OF THE PROGRAM UNDER A PROGRAM UTILITY MODEL SYSTEM

The appropriate international convention for the program utility model system is the Paris Convention. The formalities required for protection under the model are consistent with the Paris Convention. The proposed system is less problematic than the Program Right Law of the MITI, which has serious problems satisfying the Berne Convention.[53] Many of the problems in international protection involve the length of protection term. Under the proposed system, there is no problem even when short term protection is provided. In many countries which have industrial property laws, arbitration has been used for many years with good results. Arbitration should not create any serious problems under the new system. The proposed system can provide sufficient and fair international protection of programs through the Paris Convention without any need for modification. When a country intends to protect programs in such a system, it may set up an entirely new system or merely add articles to the existing utility model system or petit patent system.

CONCLUSION

We have proposed a new means of international protection of computer programs through the existing Paris Convention. The new system provides immediate and certain protection for computer programs on both the domestic and international levels. A trend toward reviewing "the right to complete patent" seems to be developing throughout the world. The problem of program protection should be contemplated free from the prejudice created by existing concepts such as the utility model, utility certificate, petit patent, or other conventional systems.

53. Higashima, *Concerning Legislation of the Program Right Law (Provisional Title) Proposed by the Ministry of International Trade and Industry of Japan*, 37(2) PAT. 107 (1984).

The system of intellectual property is currently undergoing dramatic change and some fear that amendments may have a negative influence on society. The problem of program protection should be considered carefully from a general and far-reaching viewpoint. We hope that this Article will serve as a stepping-stone for future discussion of the problem of program protection.