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III. COPYRIGHT NORMS AND THE INTERNET THE EXPERIENCE OF THAILAND

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I. INTRODUCTION

Before the passing of the Copyright Act 1994, it was often debated whether computer programs were copyright works. The Copyright Act of 1978 did not provide the direct or explicit answer since there was no mention of the term "computer program" anywhere in the Act. Opinion was sought from the Office of the Juridical Office, which was of the view that computer programs might be under any other work in the scientific domain. Some inferred the answer from the provision on the definition of copyright works, namely, Article 4[1] of the 1978 Copyright Act, that since the works accepted as copyright works under the Thai law could be expressed in any manner or form, then computer programs could be deemed literary works under the copyright law. This resort to the wording" in any manner or form" having its origin in the Berne Convention[2] of 1886 was used not only in Thailand but in other countries, particularly the common law ones, to extend the scope of literary work to cover computer programs. The argument in favour of copyright protection for computer programs was accepted, though not without scepticism[3]. It was discussed during the Uruguay Round of negotiations on the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), which entered into force on 1 January 1995.

In Thailand, the debate was finally settled by the 1994 Copyright Act that specifies computer programs as literary works[4] under copyright, as well as giving a distinct definition[5] for computer programs.

Meanwhile, since 1991, discussion had been held under the auspices of the World Intellectual Property Organization through the expert committees set up to clarify the issues in the Berne Convention and the Rome Convention and to tackle new issues brought about by advance in information and communication technologies. This resulted in the WIPO Copyright Treaty and the WIPO Performances and Phonograms in December 1996.

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[1] Article 4 of the 1978 Copyright Act : " literary work means every kind of literary expression created in any manner or form such as books, pamphlets, writings, lectures, sermons, addresses, speeches, sound recordings and /or other images."

[2] Article 2(1) of the Berne Convention: "The expression "literary and artistic works" shall include every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression……." It should be noted that the Thai Copyright Act of 1994 adopted the works contained in the definition of literary and artistic works under Art.2 (1) of the Berne Convention by sorting them into distinct classifications of works as could be seen in Arts. 4 and 6.

[3] In the US, the 1979 Final Report of the National Commission on New Technological Uses of Copyrighted Works (CONTU) set up by the Congress made the majority recommendation that the US copyright law be amended, inter alia, to make it explicit that computer programs, to the extent that they embody an author's original creation, are proper subject matter of copyright. Commissioner John Hersey dissented reasoning that copyright was an inappropriate, as well as unnecessary, way of protecting the usable forms of computer programs and that the admission of such usable form, a machine-control element, to copyright would mark the first time copyright had ever covered a means of communication, not with the human mind and senses, but with machines.

[4] Article 4 of the 1994 Copyright Act: "Literary works are all kinds of works of expression such as books, pamphlets, writings, printed matters, lectures, sermons, addresses, speeches and shall also include computer programs."

[5] Article 4 of the 1994 Copyright Act: "Computer programs are instructions, sets of instruction, or any other material used with the computer to make the computer function or to obtain a certain result
whatever may be the form of the computer program language."

The development on the copyright protection of computer programs took place in parallel with greater exploitation of digitisation[6] through the use of the telephonic linkage of computers to provide e-mail services and access to electronic databases in the 1980s and followed in the 1990s by explosive development of the Internet, which provides the unprecedented opportunity for every society in the world to take advantage and participate in the emerging information age or in President Bill Clinton's words, "the Information Superhighway". The growth of Internet,[7] particularly the World Wide Web, has severely challenged the traditional rights under the Berne Convention, and posed new issues of technological measures on protection of the content in digital form and on monitoring and tracing techniques to prevent right infringement. It will have impact not only on the international regime of copyright and related rights, but on the way of life. Mr. Bill Gates, chairman of Microsoft, commented in his article "The Web Lifestyle,"[8] that "There is incredible interest in the Web. Yet it is still in its infancy. The technology and the speed of response are about to leap forward. This will move more and more people to the Web as part of their everyday lives. Eventually, everyone's business card will have an electronic mail address. Every lawyer, every doctor and every business-from large to small- will be connected." The digital age has virtually arrived and will become a part of everyday life (in Mr. Gates' prediction, the Web will be as common as a car by the year 2008). This will come about, regardless of whether copyright can catch up or whether any other kind of protection will be deemed more appropriate in the future.

To find out the role of copyright in the digital age, we need to look at the relevant international agreements as well as the laws and the actual practices in the international community.

(a) International Agreements

The latest international agreement is the WIPO Copyright Treaty which has been signed by 50 countries[9] and the European Community. This Treaty will enter into force after 30 instruments of ratification or accession have been deposited with the Director General of WIPO[10]. It has been unprecedented in the WIPO history of agreement making that the

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[6] Professor W.R. Cornish in Intellectual Property, Third Edition p.464 defines digitisation as "the power to reduce information of all kinds into the binary representation of 0s and 1s which is the essential function of all computerised technology. Information can be accurately recorded in a form which leaves it readily available to be seen or heard. It may be retrieved as written text, graphic display, moving images, spoken words, music or other sounds; and this retrieval may be purely temporary (as in a screen display accompanied by sounds) or it may be more permanent (as when a copy, electronic or otherwise, is taken)."

[7] In the recent case of Reno v. ACLU (1997), the US Supreme Court struck down by the majority decision of 7-2 vote on 26 June 1997 certain provisions of the Communications Decency Act which sought to protect minors from the harmful material on the Internet, as a violation of the First Amendment and, importantly, declined to apply to the Internet the limited First Amendment protection that it has applied to the broadcast media. The Court was enthusiastic about the Internet, which it described as "a unique and wholly new medium of worldwide human communication", and "it is no exaggeration to conclude that content on the Internet is as diverse as human thought." The Court was equally enthusiastic about the World Wide Web as it observed from the readers' viewpoint that the Web " is comparable to both a vast library including millions of readily available and indexed publications and a sprawling mall offering goods and services." and from the publishers' viewpoint that the Web "constitutes a vast platform from which to address and hear from a world-wide audience of millions of readers, viewers, researchers, and buyers."

[8] See p. 118, the World in 1998 Yearbook by the Economist Publications

[9] Out of the 50 countries, only Indonesia and the Republic of Moldova have deposited the instrument of ratification.

[10] Article 20 of the WIPO Copyright Treaty

required number of instruments of ratification and accession are as high as 30. It was so stipulated because of the insistence of the Asian Group[11] at the Diplomatic Conference in December 1996, on the ground that digital information has no boundary, so any new rules and standards must receive as much international consensus as possible before the entry into force of the international agreement in question. Although the WIPO Copyright Treaty is not yet effective, it has a strong bearing on the digital environment as the implementation of the new standards by different countries will determine the range of rights and obligations as well as permissible exceptions and limitations. This dynamism is possible because the Treaty has resorted to the device of the so-called umbrella clause on contentious issues, that is, allowing member states to determine the measures to implement their obligations by their domestic legislation.

The international agreements in force are inevitably the Berne Convention and the TRIPS Agreement. The Berne Convention has proved to be very resilient in coping with the new techniques since 1886 such as photography, sound recording, films, and broadcasting. However, some say that if certain copyright concepts are to be distorted, as to cope with the new technology, then it might not be appropriate to rely on copyright in the first place for protection. Some[12] even say that the traditional treaty approach-to create international rights with national exceptions and limitations-is highly problematic in the seamless global information society, where jurisdictional boundaries are transparent, billions of bits of data are processed every day, and the Internet and on-line service providers are unable to monitor and identify infringing material.

The TRIPS Agreement endorses the substantive provisions of the Berne Convention and has a direct involvement in the digital age by adding the provision on the protection of computer programs as literary work under copyright.

So we should look first at the so-called traditional rights.

(b) Right of Reproduction

Article 9[13] of the Berne Convention has been exhaustively used and relied on by the right holders as providing the so-called big right, yielding higher remuneration or royalties to the holders than those yielded by other rights under the Berne Convention. The exception allowed in Article 9 has been adopted in an expansive manner both by the TRIPS Agreement for all rights under copyright and by the WIPO Copyright Treaty[14] for all rights (i.e. traditional and

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[11] The Position Paper of the Asian Group which met in Chiengmai on 21-22 November 1996 before the Diplomatic Conference stated, inter alia, that the number of ratifications needed for entry into force of the draft treaties should be one-third of the total membership of WIPO.

[12] This was the view of the Ad Hoc Copyright Coalition consisting of major on-line service providers as seen form the its paper "Intellectual Property Protection in Cyberspace: A View from the Ad Hoc Copyright Coalition" circulated before the December 1996 Diplomatic Conference.

[13] Article 9 of the Berne Convention: " ***(1)*** Authors of literary and artistic works protected by this Convention shall have the exclusive right of authorizing the reproduction of these works, in any manner or form. ***(2)*** It shall be a matter for legislation in the countries of the Union to permit the reproduction of such works in certain special cases. Provided that such reproduction does not conflict with a normal exploitation of the work and does not unreasonably prejudice the legitimate interests of the author. ***(3)*** Any sound or visual recording shall be considered as a reproduction for the purposes of this Convention."

[14] Article 10 of the WIPO Copyright Treaty on limitations and exceptions:" ***(1)*** Contracting parties may, in their national legislation, provide for limitations of or exceptions to the rights granted to authors of literary and artistic works

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new ones) in the Treaty itself, not merely applicable to the right of reproduction. The importance of Article 9 of the Berne Convention cannot be overstated.

(c) Transient Copies

The right holders of computer programs put much reliance on the right of reproduction to safeguard their economic interests. The rationale is based on the wording "in any manner or form," to cover the copying of digital signals in the medium such as floppy disks or CDs, and in the hard disk of the computer itself. The WIPO Copyright Treaty gives further clarification in the agreed statement[15] concerning Article 1(4) of the Treaty by stating that "it is understood that the storage of a protected work in digital form in an electronic medium constitutes a reproduction within the meaning of Article 9 of the Berne Convention." The interpretation of Article 1(4) which simply states that "Contracting Parties shall comply with Articles 1 to 21 and the Appendix of the Berne Convention" does highlight Article 9 of the Berne Convention due to the clarification given in the related agreed statement. The supporters of the liberal interpretation of Article 9 of the Berne Convention claim that the agreed statement allows the so-called transient or ephemeral reproduction and that reproduction regardless of whether it is permanent or transient is reproduction within the meaning of the said Article 9. This interpretation was adopted by the European Community in its 1991 Software Directive even before the making of the WIPO Copyright Treaty in the sense that reproduction covers any permanent or temporary reproduction of a program by any means and in any form, in part or in whole, including loading, displaying, running, transmission, and storage. The British law has incorporated the same approach since the 1988 Copyright, Design, Patent Act which defines "copying of a work" to include storing the work in any medium by electronic means as well as the making of copies which are transient or are incidental to some other use of the work. This interpretation of "reproduction" to include the copying in RAM of the computer has not been generally accepted. In the Thai copyright law[16], a special definition is given to the right of reproduction of computer programs to the effect that it covers "any copying or making of a copy of a substantial part of a computer program from any medium by whatever means whether in whole or in part without creating a new work". It should be noticed that in the Thai law there is a requirement for a copy. This implies a certain degree of permanence, not merely transient or incidental copying on the RAM. To adopt the European approach will mean that those in Thailand who have loaded the unauthorized copies of computer program into their hard disks before the entry into force of the 1994 Copyright Act will now find themselves criminally liable whenever they operate the computer using the said program because they will be deemed to be making a transient copy on the RAM. Such action is indispensable in the normal use of computer. It would be tantamount to giving the exclusive right of use to the right holders of the computer program. It is unthinkable that the Thai Parliament has such intention in mind when passing the latest copyright law. If it had that

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under this Treaty in certain special cases that do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the author.

(2) Contracting Parties shall, when applying the Berne Convention, confine any limitations of or exceptions to rights provided therein to certain special cases that do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the author."

[15] The WIPO Copyright Treaty contains 25 provisions and 10 agreed statements which clarify certain provisions of the Treaty.

[16] Article 4 of the 1994 Copyright Act of Thailand

intention, it could have emulated the Japanese approach in the 1996 Copyright Law of Japan,[17] which stipulates that an act of using in a computer , in the conduct of business, copies made by and infringing a copyright in a program work, shall be considered to constitute an infringement on that copyright, so long as a person using such copies is aware of such infringement at the time when he has acquired an authority to use these copies. There has been no similar formulation in the Thai copyright law. Looking at the real practice closely, it is questionable whether the extension of the meaning of reproduction is really needed by the computer program right holders to deal with the present day users, whether private or corporate as the modern programs require such a lot of memory space that they have to be copied onto the hard disk, not possibly run from the floppy disk with only 1.44 MB of memory. So in Thailand, anyone found to copy the computer program onto the hard disk without authorization could certainly be prosecuted on the ground of infringing the right of reproduction in the traditional sense.[18] The compliance of users in using the legitimate copies of computer programs could not be brought about by legal measures alone, other measures such as better business deals and service are equally important.

II. TRANSIENT COPIES OF DIGITAL WORKS

On the agreed statement concerning Article 1 of the WIPO Copyright Treaty, it is clear that "The reproduction right, as set out in Article 9 of the Berne Convention, and the exception permitted thereunder, fully apply in the digital environment, in particular to the use of work in digital form ... ." So the use of reproduction right covers not only computer programs but all copyright works. This has particular relevance to the works in the Internet which are all digital works. The question is whether browsing on the Internet, which invariably constitutes transient copying of digital works through disk-caching,[19] constitutes reproduction under copyright? Intense discussion was carried out particularly in the US among those who were in favour of treating transient or temporary copying as reproduction, namely, the proponents of the 1995 White Paper on Intellectual Property and the National Information Infrastructure, and those who do not share such view. One remarkable example is the Open Letter by 106 US professors to Senator Hatch, Senator Leahy, Representative Carlos Moorhead, Secretary of Commerce Ron Brown and Vice-President Al Gore, and the Response by Assistant Secretary Bruce Lehman, as well as the reply by Professor James Boyle of American University. The White Paper claimed that its proposals, including transient or temporary reproduction, had already been existing law. It cited the case of MAI Systems Corp v. Peak Computer Inc.[20] decided by the Court of Appeals for the Ninth Circuit on 9 April 1993 that loading software into a computer's random access memory (RAM) creates a copy under Section 101[21] of the Copyright Act, although the Court acknowledged that it had

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[17] Article 113(2) of the 1996 Copyright Law of Japan

[18] There has been no court case on unauthorized copying on RAM in Thailand.

[19] Much of the temporary memory of Web browser is actually on a "disk-cache" which is a portion of the hard disk configured by software commands to function like RAM. The disk cache is automatically purged either when the browser is closed, when too much new material added or at some selected time limit.

[20] MAI Systems Corp v. Peak Computer, Inc., 991 F.2d 511 (9th Cir. 1993)

[21] Section 101 states, inter alia, : " ''Copies'' are material objects, other than phonorecords, in which a work is fixed by any method how known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device . The term"copies" includes the material object, other than a phonorecord, in which the work is first fixed.

[21] MAI Systems Corp v. Peak Computer, Inc., 991 F.2d 511 (9th Cir. 1993)

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no"specific" authority for this proposition and that those authorities cited were "somewhat troubling." The Court considered its conclusion to be "generally accepted". Critics of the MAI decision mostly claimed that it was flawed[22] since it conflicted with federal copyright law and its underlying principles. They also argued that it dealt with just one kind of copyright work, namely, computer program, but any extension of the reproduction concept to RAM copying would cover other kinds of copyright works especially those in the digital form in the Internet. A very telling criticism of such extension could be found in the comments of Professor Neil Netanel and Professor Mark Lemley of the University of Texas School of Law who stated that " It seems to us that this approach incorrectly arrives at a formal result based on a technical description of current computer technology, rather than on the underlying policies of the Copyright Act. The question should not be whether a particular function of a computer can be construed as the making of a fixed copy. It should be whether, as a matter of policy, we want people who wish to use their computers in a certain way to have to obtain the permission of a copyright owner or to pay a statutory royalty in order to do so. Given the economics of the Internet and the desire to provide for the maximum production, distribution and use of creative works at reasonable cost, does it make sense to define looking at a work on an Internet host as an act that requires the permission of the owner of the copyright in the work?"

The debate has been ongoing. The agreed statement concerning Article 1 of the WIPO Copyright Convention has not solved this contentious issue since it uses the formulation "the storage of a protected work" which includes the act of making a copy and keeping or intending to keep it. Meanwhile in the US, there was a new court decision on 13 November 1997 touching on the digital world in the case of Marobie-FL Inc. v. National Association of Fire Equipment Distributors[23] to the effect that an Internet service provider was not liable for direct copyright infringement, despite copied material on a web site maintained for its subscriber and that software fixed in RAM for onward transmission is a fixed copy within the meaning of section 101. This case cannot be deemed an authority but it shows that the issue of transient copying entailing liability for on-line service providers is as relevant as ever in the digital age pending further development.[24]

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[21] Section 101 states, inter alia, : " ''Copies'' are material objects, other than phonorecords, in which a work is fixed by any method how known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device . The term"copies" includes

[22] There seemed to be four respects. First, the Court disregarded the applicability of section 117. Second, the use of MAI's computer in performing computer repairs falls within the fair use exemption of the Copyright Act. Third, the decision fails to construe the Copyright Act as a whole. Finally, the decision improperly extends the limited monopoly granted to copyright holders, thus constituting copyright misuse.

[23] Marobie-FL Inc. v. National Association of Fire Equipment Distributors, DC NIII, No. 96-2966. In delivering a summary judgement ruling, the court had no difficulty finding the owner of the web site directly liable for infringing computer clip art, but declined to reach the same conclusion for the provider because any copying that occurred was caused by Internet users, not by the provider. However, the court was not impressed by the provider's arguments that software in RAM is not adequately fixed to constitute a copy. In this respect, the court relied on the MAI decision. The court consequently refused to find on summary judgement that the provider is clear of any contributory infringement liability.

[24] In the US, the Bill on On-Line Copyright Liability Act (H.R. 2280)and the Bill on the Digital Copyright Clarification and Technology Education Act of 1997 (s. 1146) have been submitted to the Congress at the end of 1997. They would exclude liability of the on-line service providers in several circumstances.

It is proposed that the use of copyright to control the movement of digital works in the Internet should be a matter for careful reflection on empirical, ethical, and constitutional perspectives as well as the public policy on access of the public to global information. We should also bear in mind that even if copyright is the main tool for the protection of digital works, it does not mean that we should confine our thinking to only the extension or as some might say, distortion of the right of reproduction. The copyright protection of transient copies is very much like equating the right of reproduction in the digital environment to the right of public performance or the right of public communication as they both involve the concept of making available, which is the heart of the right of communication to the public and public performance. It is worth making an empirical study to find out whether the owners of digital works would not be better off with the right of communication to the public.

(a) Decompilation

The right of reproduction in an indirect way is one rationale for the attempt to ban the decompilation[25] or reverse engineering of the computer program, that is, decompilation indispensably involves the unauthorized copying of the computer program. But the main and direct rationales are not stated or advocated very succinctly. They have great relevance to the development of digital networking and the conduct of business in and outside the Internet. Although the total ban on decompilation has been strongly demanded by the right holders in the developed countries, the implementation of their respective copyright laws seems to move in the opposite direction. For example, in the US, the courts in four different federal circuits have found decompilation to be a permitted fair use in the cases of Sega v. Accolade[26], Atari v. Nintendo[27], Bateman v. Mnemonies[28], DSC Communications v. DGI Technologies[29]. The case law in the US also uses other approaches in giving effect to decompilation. For example, the famous case of Lotus v. Borland[30] in which Lotus failed to protect the menu command hierarchy of its "1-2-3" spreadsheet against Borland, who replicated it (using its own code) and provided for the transmission of the user's own Macros from the Lotus. The court clearly held that interface specifications are not protected as copyright by reasoning that because a computer menu command hierarchy is an uncopyrightable "method of operation" within the

[25] Decompilation is the process of translating object codes to ordinary programming languages or "source codes" but not in the original form. The process could be explained as follows in the view of the American Committee for Interoperable Systems: " Decompilation at most reveals a shadow of the original source code. When the source code is compiled into machine-readable object code, the programmer's comments disappear, and the sequence of the code is rearranged to optimize its running on the computer. Subsequent decompilation can never recover the comments, nor can it restore the original sequence of the code. Additionally, decompilation does not yield instructions in a high level programming language, but only in assembly language. To make any sense of the decompiled code, a trained software engineer mist still engage in difficult, time consuming analysis,"

[26] Sega Enterprises ltd. V. Accolade, Inc., 977 F. 2d 1510 (9th Cir. 1992). The court held that under Section 107 of the Copyright Act, "a party in rightful possession of a computer program may undertake necessary efforts, including disassembly or decompilation, to gain an understanding of the unprotected functional elements of the program, at least where their is a legitimate reason for doing so and no other means of access to the unprotected elements exists."

[27] Atari v. Nintendo, 975 F. 2d 832 (Fed. Cir. 1992)

[28] Bateman v. Mnemonies, 79 F. 3d 1532 (11th Cir. 1996)

[29] DSC Communications v. DGI Technologies, 898 F. Supp. 1183 (N.D.Tex.1995), affirmed, 81 F.3d 597 (5th Cir.1996)

[30] Lotus Development v. Borland International 49F. 3rs 807 (1995)

meaning of Section 102(b)[31] of the Copyright Act, "original developers are not the only people entitled to build on the methods of operation they create; anyone can." Another example is the use of the abstraction-filtration-comparison methodology as postulated for the first time in the case of Computer Associates v. Altai.[32] To allow the copying of user interface by holding that copyright protection does not extend to those design elements of a computer programmer's freedom of choice is circumscribed by extrinsic considerations.

The cases seemed to be based on the understanding of the judges of the tying or lock-in effect of any particular computer program if decompilation is not allowed. They also showed that the courts found the competition as a result of decompilation to be appropriate and consistent with the goals of the copyright laws.

The consideration on competition has a very real impact on the development of the US case law. It has also been prominent recently in the action taken by the US Justice Department against Microsoft on the coupling of Microsoft Explorer with the Microsoft Office program constituting unfair restrictive practice in the battle to secure the Internet business. The battle has spilled over from the use of copyright to protect the computer program to the anti-trust field.

In the European Community, decompilation is permitted in a very succinct way through the so-called Software Directive[33]which stipulates in its Article 6[34] on decompilation that

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[31] Article 2(b) of the US Copyright Act: "In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is descried, explained, illustrated, or embodied in such work."

[32] Computer Associates international, Inc. v. Altai, Inc., 982 F.2d 693 (2d Cir. 1992). The court used a very stringent test to distinguish ideas from expressions. It first analysed the "level of abstraction" of the plaintiff's program, starting from its final expression in object code. It retraced and mapped the program designer's steps back from implementation to formative conception. It was then in a position to exclude from consideration those elements taken from the public domain and those which could be expressed only in one way (elements dictated by "efficiency" and by "external factors", where expression must be regarded as confounded into ideas-the "merger doctrine"). By that process, the court arrived at a "core of protectable expression" and on the facts the defendant was found not to have copied the core of protectable expression. There have been 11 cases adopting the same approach in the Circuit Courts.

[33] The Council Directive of 14 May 1991 on the legal protection of computer programs (91/250/EEC) which required Member States to comply before 1 January 1993.

[34] Article 6 Decompilation: "***1.*** The authorization of the rightholder shall not be required where reproduction of the code and translation of its form within the meaning of article 4(a) and (b) are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs, provided that the following conditions are met:

(a) these acts are performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorized to do so ; (b) the information necessary to achieve interoperability has not previously been readily available to the persons referred to in subparagraph (a); and (c) these acts are confined to the parts of the original program which are necessary to achieve interoperability. ***2.*** The provisions of paragraph 1 shall not permit the information through its application: (a) to be used for goals other than to achieve the interoperability of the independently created computer program; (b) to be given to others, except when necessary for the interoperability of the independently created computer program; (c) to be used for the development, production or marketing of a computer program substantially similar in its expression, or for any other act which infringes copyright. ***3.*** In accordance with the provisions of the Berne Convention for the protection of literary and artistic works, the provisions of this article may not be interpreted in such a way as to allow its application to be used in

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interoperability is allowed in certain circumstances. The Community's adoption of interoperability is obvious and understandable since the more popular computer programs are written by the US right holders, so interoperability has to be allowed to permit European innovation and creativity to link with the popular programs. The fifteen Member States now grant decompilation for interoperability. Other 8 European countries have followed suit, namely, Bulgaria, Estonia, Norway, Poland, Romania, Russia, Slovenia, and Switzerland. Altogether 23 countries have the express decompilation provision.

The latest movement in the issue of decompilation is the making of the new Hong Kong copyright law[35] for which views were sought from the anti-decompilation and pro-decompilation protagonists, mainly the BSA (Business Software Alliance) and the American Committee for Interoperable Systems (ACIS) respectively. Hong Kong first drafted a provision allowing decompilation for interoperability similarly to the approach of the European Community. But the pressure from the software business led Hong Kong to drop the decompilation exception provision and adopt the fair use principle in Section 37(3)[36] as well as specify other factors concerning fair use in Section 38(3)[37] which were drawn from Section 107[38] of the US Copyright Act but with some significant omissions. It is curious to find out how a decompilation case will be tackled by the Hong Kong court. One has to consider the underlying public policy on decompilation as stated by Secretary for Trade and Industry[39]

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a manner which unreasonably prejudices the right holder's legitimate interests or conflicts with a normal exploitation of the computer program."

[35] Ordinance No. 92 of 1997 cited as the Copyright Ordinance which was passed and became effective on 27 June 1997.

[36] Section 37(3) of the Hong Kong Copyright Ordinance: "In determining whether an act specified in this Division may be done in relation to a copyright work notwithstanding the subsistence of copyright, the primary consideration is that the act does not conflict with a normal exploitation of the work by the copyright owner and does not unreasonably prejudice the legitimate interests of the copyright owner."

[37] Section 38(3) of the Hong Kong Copyright Ordinance: " In determining whether any dealing with a work of any description is fair dealing, the factors to be considered include: (a) the purpose and nature of the dealing (b) the nature of the work; and (c) the amount and substantiality of the portion dealt with in relation to the work as a whole."

[38] Section 107 of the US Copyright Act: "……In determining whether the use made of work in any particular case is a fair use the factors to be considered shall include: (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work……."

[39] The following excerpt of the speech of the Secretary of State is very illuminating of the decompilation policy of Hong Kong: "……We have reviewed our policy intention on decompilation. We would like to encourage competition in the information technology industry by facilitating timely access to information and ideas underlying computer programs. Doing so is necessary for the independent creation of new products that attach to or compete with the programs under study. We accept that the incidental copying of a computer program by a lawful user during the course of decompilation or other reverse engineering performed to understand the operation of the program under study, need not be absolutely restricted by copyright. Nor should it be completely deregulated. In determining whether the act should be allowed, we believe the overriding test is whether such act conflicts with the normal exploitation of the work by the copyright owner and unreasonably prejudices the legitimate interests o f the copyright owner. If it does, it would not be a "fair use".

With this objective in mind, we have concluded that the decompilation exception clause should be deleted and that the provisions on fair dealing should be modified. The object is to allow decompilation to be deemed a fair use provided it does not conflict with the normal exploitation of the rights and legitimate interests

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before the Second Reading debate for the Legislative Council on 24 June 1997. It could be easily detected that the competition factor had a lot of influence in the thinking of the authorities on decompilation. It is clear that the use of Section 37(3) and Section 38(3) is wider than Article 6 of the Software Directive of the European Community as decompilation is not confined to the purpose of interoperability. Besides,Section 38(3)which, according to the Secretary for Trade and Industry, was drawn from the relevant provisions in the United States, means interpretation in line with the authoritative case of Sega v. Accolade that ruled that the fair use doctrine permitted decompilation not only for the purpose of learning the information necessary for interoperability[40], but for any legitimate reason: "where disassembly is the only way to gain access to the ideas and functional elements embodied in a copyrighted computer program and where there is a legitimate reason for seeking such access, disassembly is a fair use of the copyrighted work, as a matter of law". Section 38(3) is obviously wider than Section 107 of the US Copyright Act since it omits the phrase "including whether such use is of a commercial nature or is for nonprofit educational purposes". This omission preempts any presumption that commercial use such as decompilation by a profit-making firm is unfair.

The 1994 Copyright Act of Thailand deals with decompilation in an implied manner under the exception provision, namely, Article 35(1)[41]. Decompilation could be carried out by doing the research or study of the computer program. The conditions involved seem to be more stringent than those used in the European Community and the judicial interpretation of Section 107 of the US Copyright Act because Article 35 sets up the overriding test containing 3 elements, that is, first, the act in question shall not conflict with the normal exploitation of the work by the copyright holder; second, it shall not unreasonably prejudice the legitimate interests of the copyright holder, and finally it shall not be done for profit. The last element goes beyond the criteria set in the European Community and the accepted judicial ruling in the US and even the latest copyright law in Hong Kong. The condition that the act (which in this case is decompilation) shall not be done for profit would prohibit the making of new programs in Thailand to interoperate with the internationally popular programs. Article 35(1) has ensured that the tying effect which has been denounced in the judicial interpretation even in the US itself continues to have a firm grip on the development of software in Thailand.

In the digital world where the Internet is fast becoming the only train for global information and computer programs continue to be the engine of that train, greater innovation and creativity will be needed. The Thai copyright law needs to be pragmatic in coping with the

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of the copyright owner. Drawing from the relevant provisions in the United States, we propose that other factors, including the purpose and nature of the dealing, the nature of the dealing, the nature of the copyright work as a whole, will also be taken into account in determining what constitutes "fair use" We are pleased that the Bills Committee and the software industry have found the proposal acceptable. I will be moving Committee Stage Amendments later on to achieve this."

[40] The Sega case has been affirmed by the Supreme court decision in Campbell v. Acuff-Rose Music Inc., 510 US 569 (1994) and decisions of other circuit courts.

[41] Article 35(1) of the Copyright Act of Thailand: "An act done to the computer program granted copyright by virtue of this Act shall not be deemed an infringement if it is not done for profit and is in compliance with the first paragraph of Article 32 in the following cases: ***(1)*** Research or study such computer program……." It should be noted that the first paragraph of Article 32 states the broad principle for exception similar to that embodied in Article 9(2) of the Berne Convention and Article 13 of the TRIPS Agreement, namely, the act in question is subject to the two criteria- first, non-conflict with normal exploitation, and second, non-prejudice to the legitimate rights.

fast changes in the digital world. In this regard, the condition of "non-profit making" is too restrictive even more so in view of the laws and practices of the advanced economies. Thus, it might be a good time to amend the provisions on exception concerning computer programs by bringing in an express decompilation provision, adopting a fair use doctrine explicitly along the line of the Sega case or the approach of the Hong Kong Copyright Ordinance, or even the combination of all those. The bottom line, however, is that the Thai software industry should be able to avail itself of interoperability and the public should not be deprived of choices of programs to use.

III. RIGHT OF COMMUNICATION TO THE PUBLIC

The Berne Convention refers to the public performance right and the right of communication to the public for musical works, dramatico-musical works, dramatic works, cinematographic works, and literary works (recitation) in different articles reflecting the continuous evolution of the Berne Convention to cope with the new technology of a particular given time in a fragmented manner. The WIPO Copyright Treaty has put the right of communication under one provision[42] while fully adopting the rights of public performance and communication to the public as in the Berne Convention. Article 8 of the WIPO Copyright Treaty attempts to stick to the traditional concept of the Berne Convention on communication to the public, that is, making a work available to the public by any means or process other than by distributing copies. However, the fragmented provisions of the Berne Convention are limited in the sense that they grant the right to only certain categories of works. The most glaring absentee is the literary work since only the recitation thereof is given the right of communication to the public. This means that the computer program does not have the right of communication to the public in the sense of the Berne Convention. In addition, the digital age has brought with it the multimedia work in a big way. Many kinds of works formerly existing in their own peculiar mediums such as books, music, films, photographs, graphic pictures are now put together in digital form, for example, in a CD or on a web site. Many of these works, particularly literary works (except in the case of recitation) do not have the right of communication to the public within the meaning of the Berne Convention. In fact, the multimedia works are here to stay due to the increasing popularity of the Internet and the rapid development of technology making the equipment more affordable worldwide in the normal economic climate. The WIPO Copyright Treaty attempts to close the gaps made more visible by the arrival of the digital age by extending the exclusive right of communication to the public to all categories of literary and artistic works. The form of communication is flexible because the term used in Article 8 is "any communication". Article 8 also copes directly with the digital world by covering the interactive on-demand acts of communication which are the very

[42] Article 8 of the WIPO Copyright Treaty on Right of Communication to the Public: "Without prejudice to the provisions of Articles 11(1)(ii), 11bis(1)(i) and (ii), 11ter(1)(ii), 14(1)(ii) and 14bis(1) of the Berne Convention, authors of literary and artistic works shall enjoy the exclusive right of authorizing any communication to the public of their works, by wire or wireless means, including the making available to the public of their works in such a way that members of the public may access these works form a place and at a time individually chosen by them." This provision is clarified by the agreed statement " It is understood that the mere provision of physical facilities for enabling or making a communication does not in itself amount to communication within the meaning of this Treaty or the Berne Convention. It is further understood that nothing in Article 8 precludes a Contracting Party from applying Article 11bis(2). " It should be noted that Article 11bis(2) concerns primary wireless broadcasting, cable broadcasting and rebroadcasting of the broadcast of another organization, and secondary broadcasting.

feature of the Internet itself. WIPO gives "the exclusive right of authorizing any communication to the public of their works, by wire or wireless means, including the making available to the public of their works in such a way that members of the public may access their works from a place and at a time individually chosen by them," The on-line service providers had much concern over their possible liability in the world of Internet where millions of data including the literary and artistic works pass through their networks from one user to another. The Treaty attempts to allay this concern by stating in the agreed statement that "the mere provision of physical facilities for enabling or making a communication does not in itself amount to communication within the meaning of this Treaty or the Berne Convention."

So it seems that when the WIPO Copyright Treaty has entered into force, in the countries which have ratified or acceded to the Treaty, the users in the Internet who make available the copyright work within the meaning of Article 8 without authorization of the right holder will be deemed to have infringed the exclusive right of communication to the public, in addition to the infringement of the right of reproduction. In this regard, the act of browsing by the other users in the Internet will satisfy the condition laid down in the last part of Article 8, namely, "in such a way that members of the public may access these works from a place and at a time individually chosen by them".

Although the WIPO Copyright Treaty has yet to come into force, some countries deem themselves fully in compliance with this obligation on the exclusive right of communication to the public already. The obvious example is the United States because the draft law "WIPO Copyright Treaties Implementation Act" H.R. 2281 does not make any reference to the right of communication to the public at all.[43] The US authorities seem to rely on the existing rights of "reproduction", "distribution" and "public performance" now subsisting within the US Copyright Act.

Could Thailand follow the above approach in the case that it decides to accede to the WIPO Copyright Treaty? One has to look for the answer in Article 4[44] of the 1994 Copyright Act of Thailand. The Thai law seems to be ready for the digital world as far as the right of communication to the public is concerned because it has captured the same essence as that of Article 8 of the WIPO Copyright Treaty, namely, making available of the work by "any other means". Such wording is wide enough to include the communication on the Internet and other digital networking. However, the key issue will be the definition of "the public". If the term "the public" is construed in the normal sense, then the use of LAN (local area network) within one corporate body involving,for example, 500 users will not fall within the definition; thus not subject to the right of communication to the public of the right holders of literary (obviously including computer programs) and artistic works. However, the users in the Internet environment will likely fall within the definition although they have access to the data mostly from their home. It should also be noted that under the Thai law, all categories of copyright works are granted this right of communication to the public already.

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[43] See the statement of Marybeth Peters, Register of Copyrights, before the House Subcommittee on Courts and Intellectual Property on H.R. 2180 and H.R. 2281, 105th Congress, 1st session, September 16,1997.

[44] Article 4 of the 1994 Copyright Act: "Communication to the public means making available to the public of the created work by performance, lecture, recitation, performing music, making perceptible by sound and/or image, construction, distribution or by any other means.

Despite the flexibility of the provision of the Thai copyright law on the right of communication to the public, there is a serious cause for concern since the definition in Article 4 mentions the term"distribution". Some have interpreted this to mean the distribution of physical copies. Such interpretation is alien to the meaning of "communication to the public" as stated in the Berne Convention and not in line with the meaning within the latest international agreement, namely, the WIPO Copyright Treaty. It should be noted that the Treaty deals with the right of distribution separately in its Article 6.[45] Communication to the public has nothing to do with copies or originals. So the term"distribution" in the Thai copyright has to mean "diffusion of signals" in line with the Paris Act of the Berne Convention to which Thailand has fully acceded.

It is somewhat ironic that on important points (discussed under the auspices of the WIPO in the run-up and during the Diplomatic Conference), Thailand could rely on interpretation to give effect to the standard prescribed in Article 8 of the WIPO Copyright Treaty, but would probably have to amend its provision on the right of communication to the public to eliminate any possible misunderstanding or misuse involving the term "distribution". If the authorities wish to give the right of distribution which will have immense impact on the balance of interests between the right holders and the public, they have to make it clear in the law that Thailand grants the right of distribution to the authors of copyright works. It is unthinkable that they will surreptitiously grant such right through the construction of the term"distribution" which is contained under the definition of the right of "communication to the public"

IV. TECHNOLOGY ISSUES

The digital age has been brought about by the development and convergence of information and communication technologies.[46] But at the same time the very technologies have made the right holders more vulnerable than ever since works of marketable quality could be produced easily and speedily in the digital environment, even more so in the future, with the improvement in compression technology, making films easily available through the digital network. The proponents of the need to tackle technology issues argue that the authors of copyright works need to have adequate and secured protection in the Internet environment to allow the dissemination and exploitation of their works. The US authorities have been emphasizing two issues in particular for inclusion into the WIPO Copyright Treaty: anti-circumvention and copyright management information. They have succeeded to a certain extent since the Treaty contains Article 11[47] on Obligations concerning Technological Measures and Article 12 on Obligations concerning Rights Management Information.

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[45] Article 6 of the WIPO Copyright Treaty on Right of Distribution: "(***1***) Authors of literary and artistic work shall enjoy the exclusive right of authorizing the making available to the public of the original and copies of their works through sale or other transfer of ownership. (***2***) Nothing in this Treaty shall affect the freedom of Contracting parties to determine the conditions, if any, under which the exhaustion of the right in paragraph (1) applies after the first sale or other transfer of ownership of the original or a copy of the work with the authorization of the author."

[46] The WIPO Copyright Treaty in its preamble recognizes the profound impact of the development and convergence of information and communication technologies on the creation and use of literary and artistic works.

[47] Article 11 of the WIPO Copyright Treaty on Obligations concerning Technological Measures: "Contracting Parties shall provide adequate legal protection and effective legal remedies against the circumvention of

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V. ANTI-CIRCUMVENTION

Article 11 gives a lot of leeway to the members of the WIPO Copyright Treaty since it allows members to determine the adequate legal protection and effective legal remedies against the circumvention of technological measures such as encryption, used by the authors to control access, and those used by the authors to prevent against unauthorized uses of their works. This broad and flexible approach is different from the proposal[48] submitted by the chairman of the expert committees to the Diplomatic Conference. In that proposal, the importation, manufacture or distribution of protection-defeating devices knowingly is deemed unlawful. However, the reason that the proposal was not accepted by the Diplomatic Conference is the definition of the "protection-defeating devices" which rests on the primary purpose or primary effect of circumvention. Many viewed such criteria as too broad, difficult to determine and likely to lead to confusion. Some claimed that infringement of copyright occurs when one of the exclusive rights is infringed, not when selling a device the use for which varies and the intention of the buyer is outside the control of the seller. It is not surprising that the Diplomatic Conference went for the broad formulation avoiding any reference to the contentious criteria.

One interesting development in the US in the aftermath of the WIPO Copyright Treaty is the introduction of the WIPO Copyright Treaties Implementation Act H.R. 2281 to the Congress. On anti-circumvention, the draft law will add one provision to the Copyright Act, namely, Section 1201. The US authorities[49] claim that Section 1201 deals with two main areas of concern:" the coverage of products used to circumvent, such as consumer electronics and software, and its potential impact on fair use interests. They rejected the argument that the legislation should focus solely on acts of circumvention, not on devices. They reasoned that "Because of the difficulty involved in discovering and obtaining meaningful relief from individuals who engage in acts of circumvention, a broader prohibition extending to those in the business of providing the means for circumvention appears to be necessary to make the protection adequate and effective. It is the conduct of commercial suppliers that will enable and result in large-scale circumvention." They seem to think that the persons committing the very act of circumvention will be the household users of the data in the Internet, so they prefer tackling those who manufacture the circumvention-defeating devices.

Section 1201 has two substantive parts. The first part deals with the circumvention of technological measures that control access to a copyrighted work. It prohibits the manufacture or sale of products or services that meet three criteria meant to distinguish legitimate business activities from the illegitimate. Thus, the provision covers circumstances where the products or services are primarily designed or produced to perform the prohibited acts, or are marketed by advertising their capability of doing so. It also covers those products or services that have

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effective technological measures that are used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law."

[48] Article 13 of the Draft Treaty on Certain Questions Concerning the Protection of literary and Artistic Works prepared by Mr. Jukka Liedes, Chairman of the experts committees.

[49] See footnote no. 43 above.

only limited commercially significant purpose[50] or use other than to perform the prohibited acts. The second part deals with measures that prevent acts of infringement, rather than access. Such measures might include a technology that blocks users from downloading copies. Section 1201 also specifies that it does not alter existing rights, defenses, limitations or remedies under the Copyright Act.

It is yet to be seen how any infringement cases concerning anti-circumvention will be decided on the basis of the criteria in Section 1201.Even at this stage, the legislation has provoked heated discussion. Opposition came from the organizations representing the buyers, retailers, servicers, and manufacturers of consumer electronic products such as the Home Recording Rights Coalition, the Digital Future Coalition, and the Information Technology Industry Council. Some of the criticisms are: violations of the proposed Section 1201 are not tied to infringement of any intellectual property rights held by the content provider, so liability is instead imposed for circumvention even when the activity is permitted by copyright as in cases of fair use, or access to public domain or non-copyrighted materials; the legislation fails to honour the fair use right to obtain and use multipurpose devices, recognized for home videotaping equipment by the Supreme Court in the case of Sony Corp. v. Universal City Studios; great concern that the legislation targets regulation of specific technologies, rather than behavior and illegal acts.

Thailand has no provision in its copyright law similar to the one in the WIPO Copyright Treaty or in the US draft law. The issue of technological measures is not yet settled. We have time to observe the implementation of the adequate and effective legal remedies. Technology development itself especially on encryption could provide an effective solution before the international community agrees on the appropriate measures against anti-circumvention devices.

[50] The US authorities claim that the criteria in section 1201 does not conflict with the Supreme Court decision in the case of Sony Corp v. Universal City Studios, Inc., 464 U.S. 417 (1984) which held that the manufacturer or distributor of a copying device is not liable if the device is “merely capable of substantial noninfringing uses.” , but rather a refinement to suit the present business practice by focussing instead on the criteria of “only limited commercially significant purpose”.

VI. COPYRIGHT MANAGEMENT INFORMATION

The rationale for this provision on copyright management information is the realisation that the Internet offers great potential for electronic commerce particularly as a market place for copyright works. Electronic licensing will be more prominent. But the electronic licensing will only work if there is reliable information that identifies works, their owners, and their licensing terms. "It is therefore critical to protect the integrity of the electronic market place."[51]

The WIPO Copyright Treaty contains Article 12 which requires members to provide adequate and effective legal remedies against the removal or alteration of any electronic rights management information without authority and against the distribution, import, broadcast, or communication to the public of copies with removed or altered rights management information. The last part of this provision deals with the definition of "rights management information" which includes any numbers or codes. The information must be attached to the work. The flexibility of the definition is in line with the efforts of certain groups of right holders, especially those concerning films and sound recordings, to devise electronic codes to help tracing and monitoring the use of their works such as the Imprimatur project.

The US authorities support Section 1202 in H.R.2281, which is wider than the similar provision of article 12 of the WIPO Treaty since the US approach covers copyright management information in any form, not merely digital. Section 1202 deals with both false copyright management information and removal or alteration of such information. They claim that the provision does not create any burden on the users in the digital environment as it seeks to protect the information already provided.

The protection of rights management information could possibly be an important step towards the world of full freedom of choice by users through electronic licensing or contributing towards global collective administration based on the rights management data supplied by authors worldwide who want to secure better protection and better dissemination of their works.

In the case of Thailand, there is no similar provision in the Thai copyright law. However, Thailand is no stranger in the use of copyright information to prevent infringement. Since 1993, the Thai authorities have been relying, among others, on the Consumer Protection Act to require the sellers of sound recording copies and film copies to affix the label with copyright information. The failure to affix such label or the making of false information constitutes an offense. To go into the digital environment will be quite a challenge nevertheless as Thai right holders have to be prepared to use the new means to safeguard their own interests in such new environment.

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[51] See footnote no.43 above

VII. DATABASES

The protection of databases in the traditional sense of the Berne Convention[52] which has been echoed in the TRIPS Agreement[53] and in turn in the WIPO Copyright Treaty[54] is not contentious at all. This is because the compilation or collection is protected on the ground of the selection and/or arrangement made. The copyright protection does not extend to the data or material itself which is not a copyright work. It should be noted that the protection given in both the TRIPS Agreement and the WIPO Copyright Treaty is really digital-ready as the term used is "compilations of data or other material," so multimedia works could easily fit in.

With the arrival of the digital age, the storage of data in digital form becomes increasingly important. They are the contents of the Internet. The European Community attempts to strengthen the protection of databases by passing the Database Directive of March 11, 1996 and with the implementation date of January 1, 1998. It provides two tiers of protection. The first one grants authorship of databases on the basis of personal intellectual creativity. The other tier is the *sui generis* protection given to the maker of a database against extraction or re-utilization of the contents of the database. Such protection does not rely on sufficient arrangement. The focus is on content, not the organizational structure. It must also be a product of substantial investment. The term of protection is 15 years from the completion of database.

The Software Directive was used as a model for the Draft Treaty on Intellectual Property in Respect of Databases which was not discussed at the 1996 Diplomatic Conference due to strong opposition against the criteria of substantial investment in particular and concern over granting protection to non-copyright data or material.

In the US, the practice on databases is still governed by the famous case of Feist Publications v. Rural Telephone Service Co. where the Supreme Court rejected the "sweat of the brow"doctrine, holding that creative originality was required by the constitutional provision empowering Congress to enact copyright laws. To be copyrightable, a compilation must evince a modicum of creativity in its selection, coordination or arrangement. The Court held that the work at issue, a white pages telephone directory was uncopyrightable because it lacked even this modicum of creativity. The Court also made clear that the scope of protection for compilations is "thin" because it covers only the original elements of a compilation's selection, coordination or arrangement. It is the interpretation relying on the traditional

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[52] Article 2 of the Berne Convention: "Collection of literary or artistic works such as encyclopaedias and anthologies which, by reason of the selection and arrangement of their contents, constitute intellectual creations shall be protected as such, without prejudice to the copyright in each of the works forming part of such collections.

[53] Article 10(2) of the TRIPS Agreement: " 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."

[54] Article 5 of the WIPO Copyright Treaty: " Compilations of data or other material, in any form, which by reason of the selection or arrangement of their contents constitute intellectual creations, are protected as such. This protection does not extend to the data or the material itself and is without prejudice to any copyright subsisting in the data or material contained in the compilation."

concept in the generally accepted international agreements. The US Copyright Office at the request of Senator Orrin Hatch, Chairman of the Senate Committee on the Judiciary, prepared a report on the legal protection for databases. The report raised several difficult issues including need for additional protection for databases, appropriate form of protection, how to tackle new concepts such as "substantial investment", the need to protect the public interest, and constitutional constraints. The report did not give any recommendation.

In the case of Thailand, the copyright law[55] closely follows the traditional concept as embodied in the Berne Convention and the TRIPS Agreement. There is no room for the interpretation for the *sui generis* protection along the line of the Software Directive. Thailand could certainly afford to use the wait and see approach considering that the *sui generis* protection has only been effective since 1 January 1998. There is also a need for an empirical study on the effects on the public interest not only in Thailand but also worldwide inside and outside the Internet of any new form of protection for the databases.

VIII. CONCLUSION

The amount of data in the digital environment is phenomenonal and we are going to use more and more of the Internet. It is important for the international community to have harmonized standards of protection, traditional and new, based on clear understanding of all the implications through empirical studies not merely through wishful thinking or apparent concerns which might be solved by other means not confined to the regime of copyright, with its own established concepts and practices.

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[55] See Article 12 of the 1994 Copyright Act of Thailand.