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RECONSIDERING COPYRIGHT PROTECTION FOR SOFTWARE AND DATABASES

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ABSTRACT

Software and databases are tools utilized daily by a large variety of people. Copyright, in conjunction with other legal mechanisms and technological protection methods provides too much protection for these functional works. This is alarming since software and databases are generally the tools used to access and utilize information in today's society. Overprotection in these areas may lead to the creation of information monopolies, stifling innovation and putting at risk user rights. This is especially worrisome for information and information technology importing countries such as Canada. It is suggested that regardless of the type of protection afforded to software and databases the paramount interest needs to be society's ability to access information. This can be accomplished by limiting the scope of protection afforded to software and databases and expanding the fair dealing provisions in the *Copyright Act*. The end result being, increased rights for users, as well as, increased rights for inventors to built upon existing technology and knowledge.

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Introduction

As we approach the year 2000, technology is the topic at the forefront of many discussions concerning the next millennium. Year 2000 computer bug aside, many in the media and in general society are becoming more and more aware of the role technology plays in their daily lives. The general public is showing an increased interest in the way that technology is developed, used and distributed.[1] In the legal sphere, there is a second aspect to this discussion: how to ensure the legal protection of technological innovations. Of course, the answer differs depending on the innovation in question. In the case of software programs and databases the agreed upon answer appears to be copyright.[2] Copyright protection for software

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[1] A brief look at recent newspapers, television programs, films and other forums of popular culture makes this assertion evident.

[2] Foley, Hoag & Eliot, LLP, "Recent Court Decision Increases Opportunities for Patenting Software in the United States", Patent Update, July 1998. The article concerns the US Federal Circuit Court of Appeals case of *State Street & Trust Co. v. Signature Financial Group, Inc.* involving the validity of the patenting of a data processing system for implementing a mutual fund investment structure. The Federal Circuit upheld the validity of such a patent by rejecting the business methods exception to patentability and went on to say that Congress intended "anything under the sun made by man" to be patentable, including software.

This paper does not deal with the patent issue, except insofar as it is evidence of overprotection of software and the functional nature of software.

and databases exemplifies the relationship between technology, the law and the public. The exponential increase in the use of software and databases has had a corresponding increase in the amount of litigation, scholarly writings and mainstream media articles devoted to these subjects.

One reason for the attention paid to the world of software and databases is that they are the means by which we use numerous devices and access useful information. Considering that we live in an era where information is a valuable commodity, software and databases have been interwoven into our society to the point that very little can be done without them. Thousands of everyday tasks and devices, everything from diagnostic medicine and airplanes to teaching elementary students and balancing chequebooks, depend on computer software and databases. Access to information and the means by which to retrieve information, as well as, the proper functioning of software dependent devices are of interest to a wide segment of the population. With the advent of the Internet our dependence on software and databases continues to grow. Banking, communications, commerce, information retrieval, entertainment etc. are all conducted with the

essential help of Internet software and databases. The overwhelming influence these products have on the way we work, play, are educated, and use information has to be considered when deciding on a method of legal protection. Our society has a very strong interest in having access to the latest, best quality and most efficient versions of these tools. They assist us in becoming not only a productive but also a meaningful society.

This paper will argue that copyright protection in conjunction with the extensive technological protection methods available to software and databases will lead to overprotection, and consequently to the undermining of the rights of users. Furthermore, it will be argued that user rights are not only affected by lack of access to software and databases, but also by the lack of new, innovative products. This occurs because competitors are not able to build on previous technology and knowledge due to legal protection through intellectual property laws. Since software and databases are works which require access to previous know-how and knowledge to produce new products, overprotection causes the stifling of innovation, depriving users of products that

would otherwise be available.

Another relevant point is that software and databases have certain unique properties that make them poor candidate for copyright protection. It will be shown that they are functional tools and copyright provides excessive protection for such works. Furthermore, this paper will discuss the dilution of authors' rights due to the inclusion of such developers as authors. It will be argued that the needs and aspirations of these developers are substantially different from those of traditional authors. Any dilution of the rights that traditional authors possess will be a detriment to the arts and to society in general.

Finally, although it appears that copyright will not be replaced any time soon as the legal method of protection for software and databases, it is nonetheless a controversial topic worthy of further discussion. The paper will conclude that the importance of software and databases as functional tools cannot be overstated. Given that we live in an information age, tools that store, retrieve or otherwise manage information should be subject to legal rules that take

into account the needs of the wider society. The best way to ensure quality products and the protection of user rights is to discourage monopolies and expand the fair dealing provisions of the *Copyright Act*.[3]

Copyright and Technological Innovation

There has always been tension, in the field of copyright, between restricting access to a work for the benefit of an author or publisher and access to the information by a user or the public. Copyright inherently constructs a monopoly for the purpose of ensuring that an author or publisher is financially rewarded for her effort. At the same time copyright was formulated to ensure the promotion of ideas and information for the greater good of a society.

Copyright, as we know it today, is essentially a product of an earlier information technology revolution, one created by the invention of the Gutenberg Press. This printing press

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[3]*The Copyright Act* R.S.C. 1985, c. C-42 s. 2.

first appeared in England in 1476.[4] Soon after, as early as 1529, laws were put in place to deal with dissident material circulating in England. The press had made it much easier to reproduce and hence disseminate such material.[5] The Charter of the Stationer's Company, enacted in 1556, gave 97 printers exclusive right to own a printing press and the tools of printing. As well, this group was given the exclusive right to enforce its monopoly by allowing them to burn books printed by its competition and to imprison anyone owning a press or found to be engaged in printing.[6]

This monopoly, which ensured that entry into the publishing industry and the works to be published were strictly controlled and that the right to publish a work was perpetual, was abolished in 1694.[7] Publishers, however, being well aware

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[4]Harold G. Fox, *The Canadian Law of Copyright and Industrial Design*, (Toronto: 1967).

[5]Rebecca Moore Howard, "Some Events and Ideas in the History of Authorship in the West".
Http://departments.colgate.edu.diw/RMH/ChronAuth.html
Also: John Feather, "From Rights to Copies to Copyright: The Recognition of Author's Rights in English Law and Practice in the Sixteenth and Seventeenth Centuries" (1992) Cardozo Arts & Ent. L. J.455.

[6]Howard B. Abrahms, "The Historic Foundations of American Copyright Law", (1983) 29 Wayne L. Rev. 1119.

[7]*Ibid.*

of the benefits of having a monopoly, began lobbying for a copyright regime that would fulfill the role previously held by the Stationer's company.

The Statute of Anne

The *Statute of Anne*, otherwise known as the *Copyright Act* of 1709, is said to be the world's first copyright Act.[3] The *Statute* reflected the desire of legislators to avoid the situation which existed under the Charter of the Stationer's Company. Due to new limitations imposed by the *Statute of Anne*, the printers realized that their monopoly was in serious jeopardy. The public seemed much more sympathetic to the plight of the author than the demise of the printers' monopoly. Because of this, the publishers aligned themselves with the authors and began lobbying for authors' rights, this of course, indirectly benefited them as well.[4]

The *Statute of Anne* had some effect in discouraging

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[3]Brian A. Carlson, "Balancing the Digital Scales of Copyright Law" (1997) 50 SMU L. Rev. 825.

[4]Edward Earle, "The Effect of Romanticism on the 19th Century Development of Copyright Law" (1991) 6 Intell. Prop. J. 269.

monopolies, and thus met its primary objective. One of the shortcomings of the *Statute* was that the it "constituted the author as well as the publisher with legal standing".[10] A British literary historian said the following in reply to criticism that he excluded copyright in his narrative:

> The various copyright acts and international treaties... made little difference to the lives of ordinary writers. The extension of the copyright period under the Acts of 1814 and 1842 for example, had no effect on the majority of writers because they rarely owned the copyright to their books. Publishers, however, did benefit; they were given more time in which to exhaust the copyrights they had bought from their authors. James Grant sold the copyrights of his popular historical novels to Routledge for between 100 pounds and 250 pound a time. Between 1856 and 1882 Routledge sold 100,000 copies of Grant's *Romance of War*: no wonder Grant described authorship as a "hopeless treadmill".[11]

This unfairness is also illustrated by Edward Lear who sold the copyright in his *Book of Nonsense* for 125 pounds and saw it go to 19 editions in his lifetime without receiving "a single penny more in royalties."[12]

It seems accurate to say that copyright law, in England, was formulated to balance out the rights of various publishers.

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[10] *Ibid.*

[11] N. Cross, *The Common Writer: Life in Nineteenth Century Grub Street* (Cambridge: Cambridge University Press, 1985).

[12] David Vaver, "Some Agnostic Observations on Intellectual Property" (1990) 6 Intell. Prop. J. 125.

Authors were used in order to make it more palatable to the public. David Vaver in his discussion of intellectual property states the following:

> The first myth is that copyright is designed to protect authors. In locating itself around the central character of the author copyright law is astute.... Most copyrights and patents belong not to individual creators and inventors but to the firms that employ them. One can go further. Copyright law did not grow up to protect authors. There were indeed some big names associated with the first copyright statute, the Statute of Anne of 1710: Swift, Defoe, Addison. But consider how Lord Camden described the scene surrounding the passage of the Statute:
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> > In the year 1708 **they** came up to parliament in the form of petitioners, with tears in their eyes, hopeless and forlorn; they brought their wives and children to excite compassion, and induce parliament to grant them a statutory security. They obtained the Act. And again and again sought for a further legislative security.
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> Who were "they"? Authors? No. It was the stationers, the publishers and retailers of books of the day, of whom Camden speaks. Eighteenth century authors were not one whit better off in Britain after the *Statute* than they were before. Nor were they in the nineteenth century.[13]

While this was the case in England, in France and Germany a different scenario was developing. The copyright regime in these countries was based more on personal rights with the author as the central figure. In these countries the author's personality was seen as embedded in her work. This inevitable bond between the author and the work was not severed when the work is sold to the publisher. Since the work was a reflection, and indeed, a part of herself, the

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[13] *Ibid.*

author retains the right to defend it and, by extension herself, against alteration.[14] To this end moral rights were established, giving authors some power over their work. There are four generally accepted inalienable moral rights. They are; a) the right of disclosure, b) the right of attribution, c) the right of integrity, and d) the right of retraction.[15] This meant that even though the publishers could control the economic rights of the work, the moral rights rest with the author and cannot be given away.[16] Neither regime, however, offers any special insight as to how to deal with the issues raised by the protection of software and databases via copyright, or the creation of monopolies in what are effectively functional works with, more often than not, a large number of authors. The main issue being the ease with which a monopoly can be created when copyright is applied to functional works.

Copyright was largely developed in the print era but the

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[14]Jane C. Ginsburg, "A Tale of Two Copyrights: Literary property in Revolutionary France and America" (1990) 64 Tul. L. Rev. 991.

[15]Edward Damich, "The Right of Personality: A Common-Law Basis for the Protection of the Moral Rights of Authors" (1997) 23 Ga. L. Rev. 1.

[16]In Canada moral rights are recognized but may be legally waived.

link between copyright and the creation of monopolies has not gone unnoticed. The Economic Council of Canada addressed the issue in their report on intellectual property with reference to the protection of modern technologies. The Council's report states:

> The British law of copyright, of which the Canadian law is a lineal descendant, began as a child of print technology and State censorship. By one of the more fortunate ironies of history, it eventually so cut itself off from its second ancestor as to become a system of incentives to idea-processing involving singularly little day-to-day intervention by the State and therefore minimal opportunities and temptations to censor. In spite of much ingenious adaptation over the centuries, however, its link to its first ancestor remains strong, and this is at the root of many of the copyright issues faced today, when the once-predominant print technology, though still very much alive, competes with a rapidly growing variety of new means for the processing and transmission of information. One major problem, indeed, is how to relax somewhat the constricting tie of copyright to its first ancestor without bringing about a reincarnation of the second. That is, great care must be exercised to ensure that the necessary evolution of the incentive system, in parallel with technology, does not give rise to dangerous new possibilities of censorship of knowledge monopoly, whether on the part of the State or of *private* interests.[1] (Emphasis added)

As the report asserts, the link between copyright and monopolies remains. The use of copyright to create monopolies manifests itself in much the same way as it did during the time of the Stationer's Company. Today, we have a limited number of transnational corporations who dominate

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[1] Economic Council of Canada, "Report on Intellectual and Industrial Property", January 1971.

the software and databases industries. These corporations use copyright much like the printers did: to stifle competition, restrict the rights of authors, control access to information, as well as, controlling access to alternative innovative products. US District Judge Thomas Penfield Jackson, in the Microsoft anti-trust case, found the following: 1) Microsoft wields monopoly power in the personal computer industry; 2) Microsoft hurt consumers by stifling innovation, charging higher prices and selling a product that was susceptible to crashing and 3) Microsoft pressured other companies including Intel, Apple, RealNetworks and IBM to stop development of products that threaten its software.[18] Although this is an anti-trust (competition) case it is important to remember that the protection afforded to Microsoft's source code via copyright is one of the reasons that Microsoft became a monopoly in the first place. In fact, one of the remedies proposed to the Microsoft monopoly is to force the sharing of its Windows source code.

Furthermore, the inclusion of software and databases developers under the copyright umbrella may dilute authors' rights in addition to users' rights. This is due to the fact that a few corporations or publishers own most software and

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[18]The Washington Post, "Judge Says Microsoft Wields Monopoly Power Over Rivals" November 6, 1999.

database copyrights. According to Ralph Oman there is concrete ground for such concern. In discussing the WIPO treatment of software he states:

> Of course, the traditionalists had some sound reasons for wanting to limit access to the exclusive copyright club, not just for reasons of aesthetics. They saw dangers to traditional authors and composers and artists by inviting these high-tech creators to join the party. Over the years, intellectual property has drawn its strength and its legitimacy from the great reverence we accord to works of the human mind. The WIPO had relied on this generally shared respect for the genius and hard work of our creators, and on the desire of governments to protect them, regardless of nationality, out of a sense of simple justice and fairness. Under the pressure of cultural nationalists and trade ministers who want revenues to go just one way—into the country—this old system of shared respect on which the WIPO had long relied began to crumble. For this reason, the copyright traditionalists worried that governments—willing to support high levels of protection for songs, plays, novels, and poetry—would be reluctant to give such generous support to high-visibility multi-billion dollar commercial products like computer software, databases, and sound recordings. Not only would the governments be reluctant to raise the level of protection if these commercial blockbusters were included, but they might even propose lowering protection across the board. [19]

Concern often arises when discussing ownership of copyrights in the software and database business, and the extent to which, not only copyright, but other available methods protect software and databases. Given that software and databases are created by people in the course of their employment at one corporation or another, copyrights in works created under such circumstances

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[19]Ralph Oman, "Canadian Copyright Revision: Does it Square with Canada's International Obligations?" Copyright Reform (Toronto: 1996)

rest with the employer.[32] The need for software and databases in today's society cannot be overstated. Virtually every tool we use in our everyday lives, works because of software and databases. The concentration of a legal right as powerful as copyright in the hands of very few corporations (which employ thousands of creators) is cause for concern. This concern is further reinforced by the unsettled nature of copyright protection of software and databases, creating a risk that there will be a substantial number of cases where the end result will be overprotection.[33] As discussed earlier, when copyright

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[32] The *Copyright Act*, *supra*, at note 3.
S. 13(3):
Where the author of a work was in the employment of some other person under contract of service or apprenticeship and the work was made in the course of the employment by that person, the person by whom the author was employed shall, in the absence of any agreement to the contrary, be the first owner of the copyright,...

[33] Marci Hamilton and Ted Sabety, "Computer Science Concepts in Copyright Cases: The Path to a Coherent Law" (1997) 10 Harv. J.L. & Tech. 239
The controversy and case law regarding copyright protection for computer software has not yet exploited the concepts and precise definitions that are part and parcel of computer science to accurately define the extent of software copyright protection. This lack of rigour introduces anomalies into copyright law. As a first step in integrating computer science concepts and terminology into the discourse, this paper first demonstrates that if a court finds a data structure to be copyrightable expression because the structure, sequence, and organization of a program have been held protectable, it might confer monopoly power over those algorithms dependant on the given data structure. Second, if a court extends copyright protection to expressions of computer language grammar, it will confer monopoly power over all use of a given computer language—including expression not yet fixed. The first result violates the copyright statute because the statute excludes algorithms from copyright protection. The second result also violates the statute and

protection is applied broadly, the end result is a monopoly. Therefore, copyright protection, which at times is applied too liberally and nearly always rests in the hands of a few corporations, leads to the situation we currently have: a select few corporations virtually own the software and databases industries.[32]

The current antitrust suit against Microsoft illustrates how copyright in the hands of huge software businesses leads to monopoly issues. Howard Knopf discusses this problem in his article called "Intellectual Property Meets Trustbusters", he writes:

> If Gates wins on the basis of intellectual property there will likely be nothing stopping him or anyone else who can invoke the exercise of an intellectual property right for any plausible business reason.... Copyright laws, which are vital to the computer industry, were originally intended to encourage and reward progress in the arts. Unlike patent law, with its industrial focus, copyright law historically attracted relatively little antitrust concern because artists cannot normally influence, let alone dominate an economic market.[33]

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frustrates the public policy of permitting migration paths between competing computer software products. Therefore, similarity between data structures (as distinguished from the data itself) and the similarity between expressions describing a computer language grammar that are necessary to construct a parsing program should be deemed non-infringement.

[32]John G. Mills, "Possible Defences to Complaints for Copyright Infringement and Reverse Engineering of Computer Software: Implications for Antitrust and I.P. Law", (1998) 80 J. Pat. & Trademark Off. Soc'y 101.

[33]Howard Knopf, "Intellectual Property Meets Trustbusters", The Financial Post, July 4-6 1998.

Software corporations being what they are, have the power to use copyright in ways which would bring about what existed in the past. Copyrights in the hands of the publishers affords them the power to limit public access to information. Most recently the software industry has helped to develop a new body of law called the *Uniform Computer Information Transactions Act* (UCITA) under the auspices of the *Uniform Commercial Code* (UCC) Article 2b to be passed by the various States. This piece of legislation has been characterized as one of the most anti-consumer legislation ever formulated.[24] A July 9, 1999 analysis by the Federal Trade Commission points out that UCITA allows software companies to place "restrictions on a consumer's right to sue for a product defect, to use the product, or even to publicly discuss or criticize the product." The analysis concludes, "we question whether it is appropriate to depart from these consumer protection and competition policy principles in a state commercial law statute."[25]

Monopolies in the software and databases industries will continue since the authors contemplated throughout copyright's history has been seen as creators of creative original works,

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[24]Mark Minasi, *The Software Conspiracy*, (McGraw-Hill, New York: 2000).

[25]*Ibid.*

which convey information or have aesthetic value. They are not creators of functional works or tools. This is a very important distinction because of the different roles that aesthetic and functional works play in society. Obviously there are serious implications inherent in the above analysis when deciding the appropriate legal protection for software and databases. It is very instructive then, when deliberating legal protection for software and databases that we to look at the features of each.

Software

In the early years of the computer's evolution software played a minor role.[26] The established patent and trade secret law adequately provided much of the necessary intellectual property protection. These days, however, development efforts are much more focussed on software. The software industry has been greatly helped by extensive co-operation from within in those formative years.[27] The industry correctly decided that creating and adhering to standard protocols decreased the total investment required of each individual developer and allowed interoperability by users of various products, thus greatly increasing their market.[28]

Inherent in this co-operation was the ability to freely copy interfaces, file formats, protocols and even source code.[29] This liberal exchange of research was, for the most part, the catalyst for the exponential growth and development of the industry. This rapid growth has allowed the software industry to

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[26]Mitchell Zimmerman, "Copyright in the Digital Electronic Environment", (1998) 527 PLI/PAT 543.

[27]*Ibid.*

[28]*Ibid.*

[29]*Ibid.*

become one of the leading global industries.[30] The necessity for sharing in the software industry is illustrated in the following passage:

> Computer science, though, differs fundamentally from all other sciences. Computer science has only one means of enabling peers to replicate results: share the source code. To demonstrate the validity of a program to someone, you must provide them with the means to compile and run the program.[31]

The principle purpose of software is to instruct the computer's hardware to carry out instructions. By serializing instructions to the hardware, software can achieve, complex operations consisting of millions of individual operations. Today's computers can carry out 100 million instructions in one second (MIPS). The greater the MIPS, the more complex functions the computer can effectively control. Some computers, such as those responsible for routing telephone calls, can carry out tens of billions of operations in one second.[32] Even less complicated software applications require teams of engineers to assemble, since individual human beings can only understand the operation of a small part of the

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[30] *Ibid.*

[31] Chris DiBona et al. *Open Sources*, (California: 1999)

[32] *Ibid.*

complete product. Each small part, called a module, is responsible for a single function. Each module can operate independently, as well as, a part of the whole. For the most part, software is written in source code form. Source code is a high level programming language in which people can easily express instructions to the computer. The source code is translated into object code, which the machine can understand.[33]

The computer needs to be able to readily copy the software directly into its memory so that if an operator wants to run the program she can do so quickly. Thus, the very features that make software useful to users equally make software easy to copy. As this implies, the software can be readily copied because the computer's operation requires it to be copied.

As we will see copyright is ill-equipped to deal with problems inherent in the world of software. The need for interoperability, the necessary borrowing between programmers and the utilitarian nature of software, help

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[33] *Ibid.*

contribute to the skepticism that surrounds copyright protection of software. There is no doubt the copyright has had to accommodate many technologies since the Gutenberg press. However, software technology is not necessarily suited for copyright and vice-versa. As Sookman states:

> Copyright has been stretched to the breaking point year after year in an effort to keep pace with technological developments. As applied to protection for computer programs, this has often resulted in decisions which reflect the court's attempt to fit the proverbial square peg in a round hole.[34]

This sentiment was reiterated in *Gates Rubber Co. v. Bando American,Inc.*[35] where the judge stated:

> The issues in this case stem from the traditional conflict in copyright law –how to protect an author's creative expression– while preserving competition in the marketplace. This dilemma is nothing new, but in the case law and commentators in the area of copyright protection seem woefully ill-equipped to provide a systematic means for analyzing copyright issues as they arise in the context of computer software. Indeed, the heart of copyright law, designed to accommodate unimaginable varieties of creative expression, has mandated resolution of disputes on a case-by-case basis. What magnifies the underlying dilemma however, is the realization that copyright law was not designed to accommodate computer software protection.[36]

It is easy to see why copyright is such an inappropriate method of legal protection if one assumes the generally

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[34]Barry Sookman, *Computer Law: Acquiring and Protecting Information Technology,* (Toronto: 1997).

[35]*Gates Rubber Co.* v. *Bando American Inc.*, (1992) 24 USPQ 2d 1161.

[36]*Ibid.*

accepted goals of copyright to be; public access to information, the protection of the rights of users and authors and progress through free flowing ideas. As mentioned earlier one of the best ways to improve the quality of software is to make the source code publicly available instead of protecting it via intellectual property laws. Unlike other works covered under the copyright regime, the societal interest in ensuring that we have top quality software is great. This is because of the functional nature of software. Software make devices work and when software do not work properly devices fail. Aside from the thousands of hours of work lost due to computer bugs and the number of hours spend trying to receive technical help for bugs known to the industry, there is an even more crucial reason to insist on quality software.

Software do not just run home computers: they are also responsible for the functioning of cars, airplanes, safety equipment, weapons, power plants etc. and when these software have bugs, the results can de deadly. For example, in *General Motors* v. *Johnson*[37] the court ordered GM to pay

[37] 592 So. 2d 1054, 1992 (Supreme Court of Alabama).

$7.5 million to the plaintiff because a software bug, known to GM, caused the plaintiff's car to stall at an intersection where an oncoming truck hit the car killing the plaintiff's grandson. It was revealed that GM did not feel the need to fix the software bug because it was not a structural defect.[38] Also, Flight 801 would not have crashed in Guam, killing 224 people if a piece of software called Radar Minimum Safe Altitude Warning system was better written. In this case, the software, which tells airport controllers if a plane is flying too low, caused a lot of false alarms and instead of writing better code for the program the company elected to desensitize it.[39] This means that the sensor instead of sensing low-flying planes for 63 miles, it would only sense them for 1 mile. There are numerous other cases in which badly written software has caused harm, such as hospital radiation control software which limit the amount of radiation used to take x-rays, but computer bugs seem to be treated differently then defects in other products.[40]

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[38]Minasi, *supra* at note 24.

[39]*Ibid.*

[40]*Ibid.*

The reason for this is that there seems to be a perception that low-bug software is an impossibility, but this is not the case. One of the most stable operating systems is Linux. Linux, source code and all, can be downloaded from the Internet for free. How is it that you can have free, stable software? Well, Linux is developed under the Open Source concept. Software developers, in this case, believe that the best way to ensure quality software is to share the source code, thus allowing programmers from all over the world to contribute to its betterment.

According to Cella, the Open Source strategy is "to ensure that code released into the community remains open and is not subsequently removed from the programming community by developers who modify the code and release the modified code under traditional source code and copyright traditions."[41] The Open Source model was adopted by Netscape in 1998. Within hours of making the code available, the company received code for a security patch from an Australian group of programmers and numerous other improvements came in from all over the world. In less than

[41]Charles Cella, "Considerations for companies developing software under the Open Source model" (1999) 4 Cyberspace Law. 9.

a month Netscape had an new version of its browser on the market. This was impressive enough to catch the attention of Sun Microsystems and Apple Computers both of which are now releasing some of their products with the source code.[42] Interestingly enough, however, about the only thing certain when applying copyright law to software is that the source code is protected.

Copyright and Software

There are certain principles that have evolved over time to become part of the copyright law tradition. The Canadian copyright essentials were outlined by the court in *Delrina Corp. v. Triolet Systems Inc.*[43] as stated in *Delrina*

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[42] *Ibid.*

[43] *Delrina Corp.* v. *Triolet Systems Inc. et al* (1993), 47 C.P.R. (3d) 1 (Ont. Gen. Div.) It is useful to enumerate some general principles applicable to the law of copyright.

An author has no copyright in ideas or information, but only in his expression of them.

2. Copyright subsists in original literary works. There is no copyright in what the author has copied from something already in the public domain or from a work in which another holds the copyright.
3. Even if the expression originated with the author, the expression of the idea is not copyrightable if the expression does no more than embody elements of the idea that are functional in the utilitarian sense.
4. If an idea can be expressed in only one or in a very limited number of ways, then copyright of that expression will be refused

copyright protects only the expression of an idea, not the idea itself[44] and copyright does not ordinarily apply to functional creations.[45] Under current legislation computer programs and compilations are protected as literary works, regardless of the medium in which such programs are expressed.[46] Copyright protection attaches to any copyrightable item from the moment it is created and fixed in a tangible form.[47] Therefore, computer programs are

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for it would give the originator of the idea a virtual monopoly on the idea. In such a case it is said that the expression merges with the idea and thus is not copyrightable.

5. Copyright does not subsist "in any arrangement, system, scheme, method for doing a particular thing, procedure, process, concept, principle, or discovery, but only in an author's original expression of them". Consistent with accepted thinking in copyright law, therefore, a particular expression of a mathematical algorithm or other procedure for solving a problem or accomplishing some end in the form of sets of instructions or statements may be protected by copyright, but the mathematical algorithm or other procedure as such cannot be protected by copyright.

[44]Also see: *Matrox Electronic Systems v. Gaudreau* [1993] R.J.Q. 2449 (Que. Sup. Ct.): "It is fundamental that copyright can protect the form of expression of computer programs, but not the ideas embodied therein."

[45]Also see: *Lotus v. Paperback*, 740 F. Supp. 37 (D. Mass. 1990) at pp. 57-8.

[46]*Copyright Act, supra* at note 3.

[47]George S. Takach, *Computer Law*, (Toronto: Irwin Law, 1998). There are further technical issues associated with using copyright to protect software beyond the scope of this paper such as the debate over RAM memory: According to Kristen J. Mathews in her article, "Misunderstanding RAM: Digital Embodiments and Copyright" (1997) B.C. Intell. Prop. & Tech. F. 04150:

> Furthermore, including digital works embodied in RAM as reproductions is a poor fit in light of the policy behind the

granted full copyright protection as soon as they are created.[48]

In order for a work to qualify for copyright protection it must be original. In *International Business Machines Corp. v. Ordinateurs Spirales Inc./Spirales Computers Inc.*[49] the court found that a computer program in its source code form has been found to meet the necessary criteria of representing an "... expression of thought in an original form". The word "original" however, does not necessarily imply novelty. The level of originality does not have to be

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Copyright Act. This would mean that every time a person opens a computer program, he or she might be infringing a copyright. The courts' widely criticized finding can be explained, at least in part, by early law makers' confusion about computer memory and inability to fit RAM into previous constructs. Courts and law makers have built on each others' flawed or non-existent analysis of RAM embodiments as reproductions since the 1976 Act was being drafted. These approaches ignored the purpose behind the fixation requirement when interpreting it. Since digital embodiments in RAM do little harm to a copyright holder, their categorization as reproductions is not consistent with the policy behind the fixation requirement for reproductions.

[48]After the 1988 amendments to the *Copyright Act,* the criminal punishment for copyright infringement was greatly increased. A summary conviction carries a 6 month jail term or a $25,000 fine and an indictable offence 5 years in jail or $1,000,000 fine. There is reason to believe that the increase in penalties is a direct result of an effort to accommodate the needs of software and database . developers. Gordon F. Henderson, *Copyright and Confidential Information Law of Canada*, (Toronto: Carswell: 1994) at 22.

[49](1984), 80 C.P.R. (2d) 187.

very high. According to Nimmer:

> Originality means only that the work owes its origin to the author, i.e., is independently created, and not copied from other works. Therefore a work is original and may command copyright protection even if it is completely identical with a prior work provided it was not copied from such prior work but is rather a product of the independent efforts of its author.[50]

Computer software, for the most part, meets the originality requirement. However, copyright generally protects original *non-functional* works.[51] George Takach explains in his book *Computer Law*:

> The *Copyright Act* has always been an uncomfortable home for software. Affording copyright protection to computer programs by calling them literary works has always been an effective and efficient way of combating wholesale piracy, the practice of reproducing all or almost all of a computer program and selling the illegal copy on a bootleg basis. By amending the definition of literary work in the *Copyright Act* to cover computer programs in 1988, software developers were given quick protection in Canada and abroad through the *Berne Convention*. The alternative of crafting a separate legal regime for software, as has been done with chip topography technology, would have resulted in a much slower pace of protection both domestically and globally. It is, nonetheless, something of a fiction to call software a literary work. Novels, plays, art and music, the traditional core copyright works, are communicative vehicles intended to express artistic or aesthetic values. The real genius in these types of works is their expressive flair. Of course Shakespeare crafted intriguing plots and created notorious characters, but his really profound contribution to English literature is his dialogue, the actual words he chose to express and give life to his eternal themes. There is no correct or best way to write about a love between two young people whose families stand in the way. Shakespeare did it one way in *Romeo and Juliet*, but Leonard

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[50]Nimmer, *The Law of Copyright*, (1982).

[51]Robert L. Bocchino Jr. "Computers, Copyright, and Functionality: The First Circuit's Decision in *Lotus Development Corp.* v. *Borland International, Inc.*" (1996)9 Harv. J.L. & Tech. 467.

> Bernstein expressed it in another way in *West Side Story*. Monet and Cezanne both painted the French countryside, but with much different styles-each with his own expressive print; the same can be said of Emily Carr and Tom Thomson with respect to Canadian landscape painting. In contrast, a computer program that runs a company's payroll is a utilitarian device that controls a machine to perform certain predetermined functions. Other software process documents, sorts data, performs calculations; these are very different activities than the purpose of a book, which is simply to convey information. Even maps and charts, which have long been covered by copyright, merely convey information-they do not operate machines. [52]

As suggested by Takach, software in a sense falls under the category of literary works. The source code is written in letters and the object code does consist of 1's and 0's, but it is easy to see how the literary character awarded to software can be questionable. In *Dynabec Ltee. v. La Society d'Informatique R.D.G. Inc.*[53] the court reproduced part of a source code:

```
Ok
LIST
10          LPRINT<La Compagnie d'Information ABC>:
                LPRINT:LPRINT:LPRINT:LPRINT
20          LPRINT TAB (31) <MON CLIENT LTEE>
30          LPRINT:LPRINT:LPRINT
40          LPRINT TAB (29) <LISTE DU SALAIRE BRUT>:
                LPRINT:LPRINT:LPRINT
50          LPRINT TAB (10) <NOM DE L'EMPLOYE>,
                TAB (30) <TAUX>, TAB (45)<HEURES>, TAB (60)
                <BRUT>
60          LPRINT:LPRINT:LPRINT
70          CLS LPRINT<La Compagnie d'Informatique
                ABC>: LOCATE 12,25
80          INPUT<Entrez le nom de l'employe>;
```

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[52]Takach *supra*, at note 48.

[53](1985), 6 C.P.R. (3d).

```
                NOM: LOCATE 12,25
90          INPUT<Entrez son taux horaire>;
                TAUX :LOCATE 14,25
100         INPUT<Entrez le nombre d'heures>;
                HEURES...[54]
```

The implication, from the above quotations, is that copyright was a default choice for protecting software and not because copyright is an especially appropriate vehicle for protecting this area. Karjala writes:

> Why did we suddenly turn to copyright law for the protection of such intrinsically functional works? Calling programs "literary works" is simply another way of phrasing the question. We could equally, perhaps even more aptly, call them "methods of machine design," in that they take a universal machine and transform it into one that achieves a particular result. The real reason we resorted to a copyright scheme to protect computer programs is that many programs-including programs that are costly and time consuming to develop-are simply the result of technologically straightforward application of well-known programming principles to a well-defined problem. These programs do not meet the requirement of traditional patent law for a nonobvious advance in the art. Yet, once these programs are distributed in object-code form, they can be copied almost without cost in large numbers. Without some form of protection, we should expect that they would be underproduced. Because the evil to be avoided was thus slavish copying, especially slavish electronic copying, because copyright protects at least against that, and because computer programs formally fit the broad definition of a literary work under copyright law, it became a natural candidate for the protection of programs, notwithstanding their inherent functionality.[55]

Focussing on the utilitarian nature of software does not

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[54]*Delrina, supra* at note 43.

[55]Dennis S. Karjala, "A Coherent Theory for the Protection Computer Software and Recent Judicial Interpretations," 1997, 66 U. Cin. L. Rev. 53.

imply that there is no creativity involved in producing these products. Both patents and copyright protect creativity, but copyright protects non-functional creative works. The problem with software is that although they are functional works, until very recently, even the most complex of programs did not qualify for protection under the patent regime. Taking this into consideration and the fact that computer software developers need expedient protection, as opposed to the years it takes to get through the patent process, "copyright was a convenient at-hand tool for achieving the desired result."[56]

Adding to the confusion as to the nature of functional and non-functional works is the tendency to equate functional with useful. This is problematic as it blurs the distinction between the subject matter available for patents and copyright. Functionality, properly defined, is one way to understand why two statutory mechanisms were created to protect intellectual property. Copyright protects a number of "useful" items, such as, maps, recipes

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[56] *Ibid.*

etc.[57] However, there are not useful in the sense that useful is applied in the *Copyright Act*. In the American *Copyright Act* useful articles are defined as "an article having intrinsic utilitarian function that is not merely to portray an appearance of the article or to convey information".[58]

This utilitarian nature of software and the deleterious effects of protecting software were extensively discussed in *Lotus Development Corp.v. Borland International Inc.*[59] The First Circuit court stated:

> Most of the law of copyright and the "tools" of analysis have developed in the context of literary works such as novels, plays, and films. In this milieu, the principal problem-simply stated, -if difficult to resolve- is to stimulate creative expression without unduly limiting access by others to the broader themes and concepts deployed by the author. The middle of the spectrum presents close cases; but a "mistake" in providing too much protection involves a small cost; subsequent authors treating the same themes must take a few more steps away from the original expression.
>
> The problem presented by computer programs is fundamentally different in one respect. The computer program is a means for causing something to happen; it has a mechanical utility, an instrumental role, in accomplishing the world's work. Granting protection, in other words, can have some of the consequences of patent protection in limiting other people's ability to perform

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[57]Bruce Vogel, "Copyright Protection of Software and Compilations a Review of Critical Developments 1991-1997" (1997) 481 PLI/Pat 157.

[58]Karjala, *supra*, at note 55.

[59]116 S. Ct. 804 (1996).

> a task in the most efficient manner. Utility does not bar copyright (dictionaries may be copyrighted), but it alters the calculus.
>
> Of course, the argument for protection is undiminished, perhaps even enhanced, by utility: if we want more of an intellectual product, a temporary monopoly for the creator provided incentives for others to create other, different items in this class. But the "cost" side of the equation may be different where one places a very high value on public access to a useful innovation that may be the most efficient means of performing a given task. Thus, the argument for extending protection may be the same; but the stakes on the other side are much higher. It is not accident that the patent protection had preconditions that copyright protection does not—notably, the requirements of novelty and non-obviousness—and that parents are granted for a shorter terms than copyrights. This problems of utility has sometimes manifested itself in copyright cases, such as *Baker v. Selden,* 101 US 99 (1879), and been dealt with through various formulations to limit copyright or create limited rights to copy. But the case law and doctrine addressed to utility in copyright have been brief detours in the general march of copyright law....
>
> Thus, to assume that computer programs are just one more new means of expression, like a filmed play, may be quite wrong. The "form"—the written source or the menu structure depicted on the screen—look hauntingly like the familiar stuff of copyright; but the "substance" probably has more to do with problems presented in patent law or, as already noted, in those rare cases where copyright law has confronted industrially useful expressions. Applying copyright law to software programs is like jigsaw puzzles whose pieces do not quite fit.[60]

As stated in the above quotation the cost associated with overprotection of tools, necessary to perform daily tasks, is far greater than that of purely informational works. If we look at case law concerning software protection we see that although initially copyright appeared to be good way to provide protection for software, the courts soon

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[60] *Ibid.*

realized the consequences of such protection and tried to narrow that protection afforded.

Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc.[61] is one of the first cases to deal with the problem of what copyright protects in software. The court gave such broad copyright protection to software that structure, sequence, organization and non-literal elements of a program were deemed protected by copyright.[62] In Canada, the broadest protection awarded to software under copyright law was in the *Gemologists*[63] case decided just after Whelan.[64]

The cases of *E.F. Johnson Co. v. Uniden Corp. of America Inc.*[65] and *Lotus Dev. v. Paperback Software* [66] attempted to revert to a slightly narrower interpretation of what is copyrightable in light of *Whelan*. It was in *Autoskill Inc.*

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[61]797 F.2d 1222 (3d Cir. 1986).

[62]It is a well established fact that literal elements of a computer program, the source and object codes, are protected by copyright.

[63]*Gemologists International Inc.* v. *Gem Scan International Inc.* (1986), 7 C.I.P.R. 255.

[64]*Ibid.*

[65]26 USPQ 2d 1828 (1993).

[66]740 F. Supp. 37 (D. Mass. 1990).

v. National Educational Support Systems Inc.[67] however, that the judge refused to follow the "look and feel cases" and said:

> A better approach for determining what is idea as opposed to expression is known as the abstractions test articulated by Judge Learned Hand in *Nicholls v. Universal Pictures Corporation* (17 USPQ 84 2nd Cir 1930)... [u]pon any work, and especially a play, great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may be no more than the most general statement of what the play is about, and at times may consist of only its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his ideas to which, apart from his expression, his property never extended. [68]

This idea was more precisely developed in *Computer Assoc., Int'l., Inc. v. Altai, Inc.*[69] The court developed a 3-part test which is known as the abstraction-filtration-comparison test. This is basically a part test in which the court analyzes the levels of abstraction in a piece of software, strip away all the levels that are not protectable and what is left is the protectable aspect of the software.[70]

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[67]24 U.S.P.Q. 2d 1107 (D.C. New Mex. 1992)

[68]*Ibid.*

[69]982 F.2d 693 (2d Cir 1992).

[70]For a full discussion on this test see: Michael Morgan, "Trash Talking: the Protection of Intellectual Property Rights in Computer Software", (1994) 26 Ottawa L. Rev. 425.

In Canada, *Delrina* and *Matrox* narrowed the scope of protection was considerably. In *Delrina*, after a very lengthy review of US cases the court decided:

> Whether a Canadian court should adopt the abstraction-filtration-comparison method in deciding an action for copyright infringement or some other similar method, it seems clear that before a computer program or some part of it can be held to be copyrightable, some method must be found to weed out or remove from copyright protection those portions which, for the various reasons already mentioned, cannot be protected by copyright. After the portions that are not copyrightable have been filtered out, there may or may not be any kernels or golden nuggets left to which copyright can attach.[1]

The functional nature of software, together with the difficulty in separating ideas from expression, are the main characteristics which makes software a bad candidate for copyright protection. This is obviously very dangerous considering the importance of the free flow of ideas. The free flow of ideas is important for the creation of innovative products, as well as, the progress of society in general. The protection for functional works, which generally tend to incorporate the idea into the creation, is governed by a substantially different set of rules. Furthermore, software publishers have technological means

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[1] *Delrina, supra* at note 43.

by which to protect their products in addition to various intellectual property measures.

Copyright, Software and Technological Barriers to Infringement

The Business Software Alliance (BSA) estimates that the software industry lost more than $13 billion in 1995 to global piracy.[72] Although digital technology may advance the cause of software piracy, it may also be used to fight it. Historically, technology has meant copy protection, and copy protection is met with skepticism because of past failures.[73] In the mid-1980s, software publishers turned to copy protection in an attempt to physically prevent pirates from making unauthorized copies of software.[74] According to Kory Christensen they worked in the following manner:

> For instance, each time a user wished to operate a copy-protected program, he or she had to insert an original "key disk" into the disk drive. If the key disk was lost or damaged, the computer was unable to operate the software. The industry soon turned away

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[72]www.bsa.org

[73]Thomas C. Vinje, "A Brave New World of Technical Protection Systems: Will There Still Be Room For Copyright?" (1996) 8 EIPR 431.

[74]*Ibid.*

> from the practice of copy protection for two reasons. First, publishers learned that every copy protection scheme, no matter how sophisticated, was eventually "cracked" (or defeated) by an equally clever hacker. Some analysts opined that the lifetime of any given copy protection scheme was between three and four months. Second consumer preference led to the abandonment of copy protection because "users thought [it] interfered with legitimate uses of the software." Consumers were unhappy because they could not make legitimate backup copies of their expensive programs. If the key disk became lost or damaged, software owners had to wait for the manufacturer to send a replacement. Moreover, users objected to the inconvenience of having to insert key disks whenever they used the software.[55]

Cryptography could potentially solve many of these earlier problems with security systems. It has long been used by military and intelligence agencies as a method to protect the integrity of communications.[56] Encryption involves a process which renders text unintelligible to anyone without the key.[57] Both encryption and decryption are accomplished by means of complex mathematical algorithms.[58] Modern algorithms use keys which are strings of alphanumeric digits to encrypt and decrypt messages.[59] The

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[55]Kory Christensen, "Fighting Software Piracy in Cyberspace," (1997) 28 Law & Pol'y Int'l Bus. 435.

[56]*Ibid.*

[57]Information Infrastructure Task Force, *Report of the Working Group on Intellectual Property Rights, Intellectual Property and the National Information Infrastructure*, 66 (1995).

[58]*Ibid.*

[59]Thomas Smedinghoff, *Online Law* (New York: 1996).

length of the key determines the strength of the encryption: long keys can produce virtually unbreakable security. For example, to decrypt a 128-bit key would require a computer capable of processing one million keys per second over 10^{25} years to break the code.[80]

With the development of faster computers, the science of cryptography can now be applied to many new applications. One such application is encrypting computer programs to protect them from piracy.[81] Cryptography for computer programs is not a complicated procedure. Computer programs are similar to text messages so the process is almost the same. Christensen describes them in the following way:

> Programs are represented by "bytes," or characters, and are stored in the same memory space as other documents. Therefore, like secret messages, computer programs can be encrypted with unique keys before they are distributed to the public. An encrypted software package would also include a decryption routine capable of unscrambling the software when the user provides the appropriate key. Such keys would generally accompany commercial software and would be registered to the purchaser. Alternatively, purchasers may be required to contact the manufacturer by telephone or Internet to obtain the key. For even greater security, keys could be encapsulated in hardware.[82]

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[80] *Ibid.*

[81] Michael Froomkin, "The Metaphor is the Key: Cryptography, the Clipper Chip, and the Constitution", (1995) 143 U. Pa. L. Rev. 709.

[82] Christensen, *supra* at note 75.

The advantages of cryptography are many; the user can make back up copies if she wishes, breaking in via hacking is far more difficult, it can easily be implemented over networks, etc. In fact in most cases the user need not know it is there since it does not affect any computer functions.[83]

The best part of this technology is that it is borderless. Changes in copyright legislation et cetera do not affect the level of protection. The only glitch to this scheme is that the US government has placed restrictions on certain types of encryption technology. However, these restrictions do not necessarily apply to software-protection systems. The law expressly exempts programs that are "restricted to decryption functions specifically designed to allow the execution of copy protected software, provided the decryption functions are not user-accessible."[84]

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[83]Pamela Samuelson, "Technological Protection for Copyrighted Works" (1996) 45 Emory L.J. 217.

[84]See SPA website for more technological ways to stop piracy. www.spa.org.

Innovations in encryption and other technologies designed to prevent unauthorized use of a product create a further imbalance toward the copyright owner as opposed to the rest of society. The imbalance grows with the realization that the technological means of protection are in turn protected from being tampered with by further legislation. In August 1998 the US Congress passed a bill called the *Digital Millennium Copyright Act*[85] specifically designed to protect software anti-piracy technology from being circumvented. There are stiff penalties for compromising technologies inserted into products by copyright holders. The bill was supposed to implement the WIPO copyright treaties but ended up being much more.[86]

The combination of copyright protection, technological protection and legislation against the tampering with anti-piracy devices, gives the software industry far too much protection. This industry should not have this protection given the utilitarian nature of its products and the role these products play in modern economy and society. One way

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[85]*Digital Millennium Copyright Act* (s.2037).

[86]www.abcnews.com/sections/tech/CNET/cnet_copyright0515.html.

to ameliorate the situation is to expand the fair dealing doctrine of the *Copyright Act*. The fair dealing provisions should expressly allow for the sharing of code, reverse-engineering and to recognize the role that software play in society and adequately protect users.

Copyright, Software and Users

Users have several rights under copyright. These users' rights include: 1) the right to use a work for criticism, comment, news reporting, scholarship, or research; (fair dealing) 2) the right of libraries to make single copies for interlibrary loan programs and to provide photocopy machines for public use so long as a copyright notice is posted; 3) the right of an owner of a lawful copy of a copyrighted work to sell or otherwise dispose of it; 4) the right of teachers or students in non-profit educational institutions to perform or display works in instructional settings; and 5) the right of an owner of a lawful copy of a computer program to make a backup copy and adapt the program for use with a particular machine.

The dilemma between rewarding the creator while allowing the public access to the creation was dealt with in *Sayre v. Moore*[97] where the court stated:

> The rule of decision in this case is a matter of great consequence to the country. In deciding it we must take care to guard against two extremes equally prejudicial; the one, that men of ability, who have employed their time for the service of the community, may not be deprived of their just merits, and the reward of their ingenuity and labour; the other, that the world may not be deprived of improvements, not the progress of the arts be retarded.[98]

This concern was recently reiterated in the Preamble of the *1996 World Intellectual Property Organization (WIPO) Copyright Treaty*, where it states:

> The Contracting Parties,...
>
> Emphasising the outstanding significance of copyright protection as an incentive for literary and artistic creation,
>
> Recognising the need to maintain a balance between the rights of authors and the larger public interest, particularly education, research and access to information, as reflected in the Berne Convention,

The maintenance of the balance between the interest of society and those of the copyright holders is crucial for an intellectual property-importing nation like Canada. Canada needs to seriously examine the effects on Canadian

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[97](1785) 1, East's Report 361 (K.B.)

[98]*Ibid.*

society of such strong protection of vital technology. The Economic Council report addressed this issue in the following manner:

> Even if Canada greatly improves its performance as a knowledge producer and a purveyor of information internationally, its balance of international payments for information will likely be always heavily outbound, and this fact should be kept clearly in mind for purposes of international negotiation. The maintenance of good access to foreign information is crucially important for Canada and it should be the lowest cost access obtainable, consistent with Canadian consumers paying a fair share of reasonable incentive to authors and other copyright holders and assignees the world over.[29]

A country like Canada, needs to protect itself from being excluded from the information loop due to its citizen's inability to pay whatever information monopolies decide to charge. According to Judge Jackson in the Microsoft anti-trust case, Microsoft could have easily charged $49 for a Windows 98 upgrade but decided instead to charge $89 in order to maximize its profit.[30]

There is also a concern about monopolies created via intellectual property shared by people in the software industry, as it becomes more and more evident that the larger corporations are not allowing smaller ones to

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[29]Economic Council Report, *supra* at note 17.

[30]The Washington Post, *supra* at note 18.

compete. The following results from a survey reported by Burton show this alarming trend:

> By 79.6% to 8.2%, the computer programmers said that granting patents on computer software impedes, rather than promotes, software development. (The remaining 12.2% were undecided.) By 59.2% to 26.5%, most went even further, saying that software patents should be abolished outright. (Current U.S. law allows the patenting of computer software algorithms, but many other nations do not recognize such patents.)The programmers are even more strongly opposed to copyrights on the "look and feel" of software user interfaces. By 85.7% to 8.2%, they think that such copyrights impede, rather than promote, software development. By 77.6% to 14.3%, they want to abolish such copyrights.[11]

As we have seen, the link between copyright and monopolies is a strong one. This link is very disturbing when the scope of copyright is extended to include functional tools such as software. The role that software plays in our society is very different than that of traditional copyrightable works. Monopolies in the software industry affect a wide segment of the population. As it was said previously, the cost of overprotecting in industries such as software is tremendous. Lack of innovative software, the undermining of user rights, the dilution of authors' rights, are all results of the monopolies created with the help of misapplied intellectual property laws. As

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[11]Burton, "Software Developers Want Changes in Patent and Copyright Law" (1996) 2 Mich. Tel. Tech. L. Rev. 2.

conceded earlier, copyright will most probably not be replaced as the legal method of protection for software but the scope of protection can be limited. As we have seen, the courts seem have taken this route, upon the realization that copyright provided too much protection for these works.

There needs to be clear legal precedent provided as to the exact scope of copyright protection for software. As it stands now, there is much confusion about the what protection is afforded to software. As new technologies emerge this confusion will grow. For example how to protect works created by software, or multimedia works. It is vital that courts clarify this area of law. This is especially true for Canada, given our position as a software importer. If copyright is to fulfill its purpose as a method for the promotion of ideas and information; the prctection of authors and users; and the discouraging of monopolies by disallowing ownership in ideas, a clear limitation to the scope of protection for software needs to be set. This can be done either within the existing copyright laws through the expansion of the fair dealing provisions or via a sui

generis system. There is no doubt that software needs legal protection. In fact its vital role in society necessitates protection for such an important tool. The protection however should not lead to monopolies and the stifling of innovation by others.

In today's world it is virtually impossible to lead a productive life without the use of software to perform numerous utilitarian tasks and to access information. The tools which make all this possible need to be protected in a manner which takes into consideration not only the unique nature of these tools but also their role in society. As copyright was designed with very different works in mind, protecting software via copyright leads to overprotection. Furthermore, copyright in conjunction with technological barriers to infringement virtually ensures overprotection.

Databases

Databases, like software, have found legal protection under the copyright umbrella. Also, like software, databases do not easily fit under this umbrella. In fact, copyright is even less appropriate for databases than it is for software. This is because, in addition to being utilitarian works that are vital to the functioning of modern society, they contain knowledge. Unlike software, which is the means by which information is accessed, databases are stores of information and copyright protection risks creating monopolies in the information itself.

An electronic database is a "body of facts, data, or other information assembled into an organized format suitable for use in a computer."[82] First the data needs to be converted to a digital form, and then stored in a computer. Via software, data can be searched and retrieved according to user specifications. The information can be

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[82] *Feist Publications, Inc.* v. *Rural Tel. Serv. Co.* (1991) 111 S. Ct. 1282.

stored on a number of computers, not necessarily in the same location, but a user may access all the information from any computer as long as her computer has the appropriate software.[33] The user identifies a category of information she wants to query, inputs the keywords into the appropriate field and the computer does the rest. The computer, via the software, retrieves the information that matches the users query.[34]

There are a number of costs associated with the creation of a database. First there is the cost of the hardware or host computers, this can be as high as millions of dollars.[35] Second, there is the software cost-the cost for software that allows the user to interface with the host computers. Included in this cost is the software necessary to organize the data itself. This cost is also substantial since it incorporates the initial cost of developing the software as well as, the cost of maintaining and upgrading

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[33]Philip Miller, "Life After Feist: Facts, the First Amendment, and the Copyright Status of Automated Databases" (1991) 60 Fordham Law Review 507.

[34]*Ibid.*

[35]*Ibid.*

the software.[96] Lastly, there is the cost of assembling and digitizing data. This cost varies depending on the type of database being built.[97] The cost and effort involved in building and maintaining a database is very substantial. Given this, it is understandable that the owners of databases want to protect their work. However, copyright provides excessive protection for such works.

Electronic data compilations are a useful outcome of the evolution of computers and computer software. As computer software and other technologies made information more vital to today's society, the need to organize, store, and retrieve this information has also become vital. Compilations have become part of daily life for many people in industrialized societies.[98] Considering that we live in an information society where the amount of information available to us is enormous and hence impossible to filter as individuals, databases serve a very real need. The

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[96] *Ibid.*

[97] *Ibid.*

[98] For a concise discussion on the history of copyright protection of computer related works see: Jennett M. Hill, "The State of Copyright Protection For Electronic Databases Beyond ProCD v. Zeidenberg: Are Shrinkwrap Licenses a Viable Alternative for Database Protection", (1998) 31 Ind. L. Rev. 143.

sorting and arranging of information in a user-friendly, and topic-specific manner is not only extremely useful, it is also necessary. It can be very time consuming and arduous work. But, should it be copyrightable?

Copyright, in a sense, is the balance between the rights of copyright owners to restrict access to their works and the public's right to have access to information. It allows owners to profit from their endeavours and it allows the public to build on previously conceived ideas. As previously noted, when the components of copyright change, so does the cost to society. The addition of functional works to copyright may alter this balance too much in favour of the copyright owners. Given the enormous role databases play in our society this potential imbalance is very alarming.

Databases and Copyright

Technically a database comprising a compilation of facts may be copyrightable in US and Canadian law. Similar issues exist for the protection of compilations as they do for the

protection of software. Copyright does not protect the ideas expressed in software and neither does it protect the facts contained in a compilation. The question remains the same for both: how to protect the expression without creating information monopolies while, at the same time, not diluting users' and authors' rights?

Before the US Supreme Court's decision in *Feist Publications, Inc.* v. *Rural Telephone Service, Inc.*,[99] some courts, including Canadian courts, relied on the "sweat of the brow" or "industrious collection" doctrine to find a valid copyright in compilations. The underlying notion of the "sweat of the brow" doctrine is that copyright is a reward for the hard work that goes into compiling facts. Thus, in cases where this doctrine was used, a copyright was awarded not because of an original work of authorship, but because of the amount of effort and industry put into the work. In other words, a copyright was found under this doctrine to protect the "sweat of the brow." In *Feist*, the Supreme Court rejected this doctrine. Rural publishes a typical telephone directory, consisting of white pages and

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[99] 499 US 340 (1991).

yellow pages. It obtains data for the directory from subscribers, who must provide their names and addresses to obtain telephone service. Feist Publications extracted the listings it needed from Rural's directory without Rural's consent. Although Feist altered many of Rural's listings, several were identical to listings in Rural's white pages. There was uncertainly as to whether Canadian Courts were going to follow the *Feist* decision, especially since the "sweat of the brow" doctrine was more deeply rooted here than the US. The affirmative answer came via a Federal Court of Appeal case called *Tele-Direct v. American Business Information, Inc.*[100] In this case American Business Information used telephone data compiled by Tele-Direct. By refusing leave, the Supreme Court effectively approved the decision.

The Supreme Court's decision came as no surprise given that, as with software cases, Canada has looked to US case law for guidance in the database arena. *Feist* and other US cases are important when discussing database protection in Canada. There are however, certain differences between

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[100](1997) 76 C.P.R. (3d) 296 (F.C.A.).

Canadian and American copyright law that need to be kept in mind. In the US, the constitutional wording of the purpose of copyright is to "promote the Progress of Science and useful Arts by securing for limited Times to Authors the exclusive Right to their respecting Writing and Discoveries."[101] The fair use provision in the US gives judges wide discretion to find otherwise infringing activity as complying with copyright laws because it promotes useful arts. This concept is further expanded to include a social responsibility placed on authors to provide society with useful arts in return for copyright protection. According to Howell, these factors imply "a 'qualitative' element underlying copyright law in the United States."[102] It is therefore easy to see in *Feist* why the Court decided that "some minimal degree of creativity"[103] is mandated by the US Constitution.

In contrast, Canada's constitution simply stipulates that copyright is a federal matter. There does not appear to be

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[101]*United States Constitution*, Article 1, Section 8 Clause 8.

[102]Robert Howell, "Part I: Database Protection in Canada" 1998 **http://strategis.ic.gc.ca/SSG/ip01048e.html.** Visited 12/5/99.

[103]*Ibid.*

a "qualitative" element in Canadian copyright law. The absence of such an element has allowed the "sweat of the brow" doctrine to evolve more freely in Canada though there is an understood responsibility of authors to society in general. The key difference was mentioned by the Federal Court of Canada in *Hager* v. *ECW Press Ltd.*, [1998] F.C.J. No. 1830. The court found copyright in quotations and biographical information. In this case the defendant used quotations found in the plaintiffs book. The court ruled that there was a copyright infringement. This case would seem to provide some of the protection database owners believed they lost in *Tele-Direct*. The defendants relied heavily on U.S. decisions in arguing its defense. The Court repeated the Federal Court of Appeal's warning in *Tele-Direct* that U.S. copyright jurisprudence must be approached with great care. Whereas U.S. copyright law finding its roots in the U.S. Constitution, Canada's Act traces its roots from U.K. copyright legislation leading to fundamentally different approaches to Copyright protection.

Original and Creative

One way in which copyright law has attempted to balance the rights of copyright owners with the interests of society, is to limit what can be copyrightable. The two basic components of a copyrightable work are originality and creativity. According to Abrams,

> ...the question of originality, the threshold standard of qualification for copyright protection is at the core of copyrightability. Defining or redefining this threshold has serious consequences for the copyright system....Thus what is at stake in any definition or redefinition of originality is the coverage of the copyright monopoly and the balance between copyright owners and users at its most basic level.[134]

For databases there applies a further defining principle of copyright: facts are not copyrightable. According to the CRTC decision in *Bell Canada-Directory File Service*[135]:

> In the commission's view copyright could attach to a compilation of basic non-confidential listing information as a result of the sorting, arrangement or classification of that information. However, in the Commission's opinion, the basic non-confidential listing information cannot attract a claim of copyright in and of itself. Thus, while it may be possible to claim copyright for a directory, either in hard copy or electronic form, the raw listing information contained in the directory is not subject to being copyrighted.[136]

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[134]Howard B. Abrams, "Originality and Creativity in Copyright Law" (1992) 55 Law and Contemporary Problems 2.

[135]Telecom Decision CRTC 92-1 (3 March 1992).

[136]*Ibid.* Also Article 10(2) of TRIPS states:
> Compilations of data or other material ... which by reason of the selection or arrangement of their contents constitute intellectual creations and 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.

The dilemma of how to protect databases without removing facts from the public domain was discussed in *Feist*. In this case the plaintiff published a telephone directory for certain towns in Kansas. The defendant after being refused permission to use the plaintiff's listing, used it nonetheless to create a slightly different compilation of its own.[107] The court questioned copyright as the legal form of protection for databases. The Court stated that, since there are compilations that consist on only facts without any original or creative expression how can facts that are not copyrightable become so when gathered in one place?[108]

The court affirmed the uncopyrightability of facts by noting that, "facts do not owe their origin to an act of authorship. The distinction is one between creation and discovery: the first person to find and report a particular fact has not created the fact..."[109]

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[107] Feist, *supra* note 92.

[108] *Ibid.*

[109] *Ibid.*

The court went on to deal with the question of originality in databases. The court found that original selection and arrangement that exhibits minimal creativity is copyrightable. Therefore, copyright does not protect the facts themselves but does protect the way in which they are presented. The court clarified this protection by stating:

> This protection is subject to an important limitation. The mere fact that a work is copyrighted does not mean that every element of the work may be protected. Originality remains the *sine qua non* of copyright; accordingly, copyright protection may extend only to those components of a work that are original to the author.[112]

Originality in copyright has a long history. It was first legislated as a prerequisite to copyright protection in 1911 in the UK and 1921 in Canada. This legislative change was preceded by the 1900 UK case of *Water v. Lane*.[113] According to Howell:

> It is very illustrative of the perceived difference in copyright law today between the "creativity" requirement in Feist and the sufficiency of "sweat of the brow" in relation to compilations. It did not, however, involve a compilation. Newspaper reporters recorded verbatim by shorthand notes a public speech of a politician. Four members of the House of Lords upheld copyright in the reporters and, through them, the newspaper. Two of those members - Lord Halsbury L.C. and Lord Davey - considered merely the effort that the reporters had expended. Although it was minimal, it was more than that expended by the defendant who simply copied from the newspaper. This was "reaping where he had not sown". In effect these members were comparing degrees of effort and this, it is suggested, is essentially the prevention of unfair competition. The other two members - Lord James and

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[112] *Ibid.*

[113] [1990] A.C. 539 (H.L).

> Lord Brampton - essentially looked for original form of expression or who were the authors. They noted that the reporters were the first to create the written text (the politician did not have prior writing of his speech). The situation of a secretary or amanuensis (e.g, a stenographer) was distinguished partially upon the greater skill needed by the reporters in the open format of a public meeting.(The dissenting member, Lord Robertson, sought even greater creativity - well beyond, simply accurate reporting. In this circumstance, it has been suggested elsewhere that the choice between quantitative "sweat of the brow" and qualitative "creativity" in establishing an original form of expression can be said to have been posed early in English law.[112]

The 1901 Supreme Court of Canada case of *Cadieux v. Beauchemin*,[113] in which a dictionary was copied, established the "sweat of the brow" doctrine in Canadian law. The case decided that a compiler's time and effort ought to be protected.

One may note that this limitation to the copyrightability of databases is unfair to database owners. However, the court in *Feist* presented a counter argument:

> It may seem unfair that much of the fruit of the compiler's labor may be used by others without compensation. As Justice Brennan has correctly observed, however, this is not "some unforeseen byproduct of a statutory scheme." It is, rather, " the essence of copyright," and a constitutional requirement. The primary objective of copyright is not to reward the labor of authors, but "to promote the Progress of Science and useful Arts." To this end, copyright assures authors the right to their original expression, but encourages authors to build freely upon the ideas and information conveyed by a work.... this result is neither unfair nor unfortunate. It is the means by which copyright

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[112]Howell, *supra*, note 102.

[113](1901) 31 SCR 370.

advances the progress of science and art.[114]

After Feist

The US case law following *Feist* is, at best, confused. In *CCC Info. Servs., Inc. v. Maclean Hunter Mkt. Reports, Inc.*,[115] the 2nd Circuit applied the principles of *Feist*. The facts were as follows: Maclean publishes the Red Book for automobiles having predicted car values for different types of cars. CCC entered substantial portions of the Red Book into its database service. The Second Circuit held that Maclean's compilation of predicted car values was sufficiently original to support copyright by containing values reached by judgment and experience of authors.

Similarly, in *Key Publications, Inc. v. Chinatown Today Publishing Enters., Inc.*,[116] the yellow pages of a Chinese-American directory were held to be copyrightable because subjective judgment was shown in selecting which

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[114]*Feist, supra*, at note 92.

[115]44 F.3d 61 (2d Cir. 1994), *cert. denied*, 116 S. Ct. 72 (1995.)

[116]945 F.2d 509 (2d Cir. 1991).

businesses in New York City would be of greatest interest to the Chinese-American community. The directory had an original selection and arrangement, and was therefore copyrightable. The court held that there was no copyright infringement by a competitor's directory.

However, in *Bellsouth Advertising & Publishing Corp. v. Donnelley Info. Publishing, Inc.*,[117] it was held that BellSouth's selection, coordination and arrangement did not display the originality required to merit copyright protection. The arrangement of Bell South's yellow pages was like the arrangement of the White pages in *Feist* and entirely typical.

ProCD, Inc. v. Zeidenberg,[118] is a case in which ProCD sold a telephone directory database and software to search and access the database. Zeidenberg purchased the product, downloaded the information and made it available on the Internet. Since the database was a telephone directory, much like *Feist*, it seemed clear that it was not

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[117]999 F.2d 1436 (11th Cir. 1993)*cert. denied*, 114 S. Ct. 943 (1994).

[118]908 F. Supp. 640 (W.D. Wis. 1996), *rev'd*, 86 F.3d 1447 (7th Cir. 1996).

copyrightable.

In *Matthew Bender & Co.* v. *West Publishing Co.*,[119] the district court again dealt with *West's* star paging. Star paging is a method used by West Publications to refer to a page in the hard copy version of its digital legal documents. However, in this case the court said copyright does not extend to the page numbers. The court held that West's copyright in its case law reporters, a compilation copyright, does not extend to the page numbers. Accordingly, Matthew Bender may use star paging in its product.

It is obvious that copyright protection for compilations is anything but settled. When a database is utterly devoid of any originality then, there seems to be a unanimous agreement that such databases are not copyrightable. However, if any sort of originality is evident, such as a telephone directory for the Chinese community then copyright can be applied. The main stumbling block is that courts do not want to give monopolistic control over facts

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[119]41 U.S.P.Q.2d 1321, (1996).

to any one entity. Using copyright to protect ideas or facts is in direct contradiction with the fundamental principles of copyright. If copyright protection for databases is allowed, the end result is the removal of knowledge from the public domain. The data in the database is only available to those with access to the database and not to society in general. This can be very problematic for a country like Canada which is, for the most part, an importer of information.

Database Protection in Canada

As discussed, in Canada, by far the most important case in terms of database protection is *Tele-Direct.*[150] This case appealed a Federal Court Trial Division decision which ruled that yellow pages directories were not protectable by copyright. The Appeal court agreed with the Trial Division and went on to deal directly with the *Feist* decision. The court decided that there had to be some creativity involved in order for copyright to apply. In the court's opinion this case did not meet this minimal standard of creativity

[150](1997), 76 C.P.R. (3d) 296 (F.C.A.).

and hence should be denied copyright. With this decision the Federal Court of Appeal put aside the "sweat of the brow" tradition in Canada.[121] More recently, in *Edutile Inc. v. Automobile Protection Assn*,[122] the Federal Court Trial Division decided that the plaintiff's price guide did not constitute an original literary work in which copyright could subsist.[123]

As it currently stands, compilations maybe protected if there is evidence of original creative organization and arrangement. The protection provided is nonetheless a thin one and does not generally extend to the facts comprising the compilation. The "sweat of the brow" tradition has been repudiated both here and the US in favour of creativity.[124]

There is a strong similarity between issues related to copyright and software and copyright and compilations.

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[121]For an extensive list of Canadian compilation cases and what they protected see: Takach *supra* note 106 at footnote 179.

[122](1998) 81 C.P.R. (3d) 338.

[123]*Ibid.*

[124]An attempt to protect databases by WIPO failed due to the inability of states to agree to what protection should be afforded. David Nimmer, "A Tale of Two Treaties Dateline: Geneva-December 1996" (1997) 22 Colum. VLA J.L. & Arts 1.

There is the aforementioned dilemma between ideas/facts and expression. Both are functional works and overprotection in either will lead to serious restriction of information available to the general public. The issue of ownership of copyrights in compilations raises the same concerns as in software. It could be argued that the problem is even more severe with compilations because with compilations what is being considered is the restriction of ideas and factual information. These are obviously, of great consequence to a society. If the restrictions are successful, vital information becomes a commodity only available to those able to pay the compilation owner. Ownership of information is thus a key issue here as in the software protection debate. This issue was addressed by Knopf:

> The database industry portrays itself at risk because of the Feist and Yellow Pages decisions, as well as antitrust enforcement. Having lost several copyright battles proponents of new database protection laws are now asking for a regime that is much more powerful than copyright law itself ever could be. This super-protection would potentially last forever, as long as the databases are updated. Mere facts, devoid of any originality, would be subject to exclusive ownership - a principle anathema to traditional intellectual property law. Strong efforts are under way in the scientific, technical and medical fields to control databases consisting of journals and other key information essential to basis research. In the arts, Gates is a major investor in controversial acquisitions of digital rights in museum and photography collections ... On the road ahead, there will be talk about "lawfully acquired monopolies," of which copyrights and patents are normally prime examples ...[125]

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[125]Knopf, *supra* note 23.

While the US and Canada adopted an originality based copyright protection for databases, the Europeans created the European Database Directive, combining more limited copyright protection with *sui generis* protection, to deal with the same problem. As we will see, their solution may not be in the best interest of the users, authors or the public.

The European Database Directive

A country's intellectual property approach used to be reflective of that country's philosophy, economic status and cultural identity. However, the globalization of markets has put pressure upon intellectual property systems to harmonize.[126] This pressure to harmonize is seen in the countries which make up the European Union. These countries represent the full spectrum of intellectual property philosophy, from utilitarians to natural rights theorists. The United Kingdom has long protected work based on labour

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[126]Sunny Handa, "A Review of Canada's International Copyright Obligations" (1997) 42 McGill L. J. 961.

and effort, whereas Germany has insisted on a high level of originality and France on high level of creativity.[127]

In 1992, the EC Commission issued a Proposal for a Council Directive on the Legal Protection of Databases.[128] This was followed in October 1993 by the Commission's Amended Proposal for a Council Directive on the Legal Protection of Databases.[129]

On July 10, 1995, the Council issued its Common Position on the Database Directive. Recognizing the importance of databases in the development of the EC information market, the Database Directive aims to harmonize or standardize copyright protection of databases throughout the EU in order to provide sufficient protection and eliminate any barriers to the functioning of the internal market. The Database Directive specifically

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[127]Paul Durdik, "Ancient Debate, New Technology: The European Community Moves to Protect Computer Databases" (1994) 12 Boston U. International L. J. 153.

[128]1992 O.J.C. 156 (May 13, 1992).

[129]1993 O.J.C. 308 (Oct. 4, 1993).

acknowledges the investment of "human, technical and financial resources" involved in compiling a database and also recognizes the economic consequences of unauthorized use of the contents.[130]

The Database Directive applies to both electronic and non-electronic databases. Article 1 of the Database Directive defines a "database" as "a collection of works, data or other independent materials arranged in a systematic or methodical way and capable of being individually accessed by electronic or other means."[131]

The copyright protection available under the Database Directive, however, does not apply to computer programs used in making or operating electronic databases. The Database Directive protects those databases composed of

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[130]Simon Chalton, The Copyright and Rights in Databases Regulations 1997: Some Outstanding Issues on the Implementation of the Database Directive" (1998) EIPR 178.

[131]*Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of data.* **Http://www2.echo.lu/legal/en/dataprot/directiv/directiv.html, visited 12/5/99.**

copyrighted material and those composed of non-copyrighted material, as long as the selection and arrangement are original. [132]

Article 2 of the directive limits its scope so as not to prejudice EC policy with respect to the legal protection of computer programs, the rental right and lending right, and the term of protection of copyright and other rights. Recital 26 to the Database Directive provides that:

> works protected by copyright and services protected by related rights, which are incorporated into a database, remain nevertheless the object of the respective exclusive rights and may not be incorporated into, or reproduced from, the database without the permission of the rightsholder or his successors in title. [133]

In other words, the holder of rights to the database does not hold copyrights in underlying copyrighted materials.

Originality is the criterion for copyright protection. Article 3 of the Directive provides that only databases that are the product of an author's own intellectual

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[132] *Ibid.*

[133] *Ibid.* Article 2.

creation shall be protected as such by copyright. It remains to be seen what degree of originality will suffice for copyright protection, under the terms of the Database Directive. The directive also provides for protection of moral rights.[134]

Sui Generis

The most controversial aspect of the Database Directive is the *sui generis* right. This right prevents unauthorized extraction or re-use of the data that comprises the database. The *sui generis* right, like the "sweat of the brow" test, recognizes the investment involved in creating a database. The *sui generis* right is contained in Article 7 of the Directive and prevents extraction or re-use of the whole or a substantial part of the contents of a database. The right aims to protect the author's investment of time, effort and financial resources in the creation of the database. The exercise of the sui generis right applies to the creation of "parasitical competing product" and to any

[134] *Ibid.* Article 3.

other action that lessens the value of the database.[135] Downloading of a copy or portion of the database does not exhaust this right by a licensed on-line user. Extraction is defined in the Database Directive as "the permanent or temporary transfer of all or a substantial part of the contents of a database to another medium by any means or in any form." The Directive defines re-use as "any form of making available to the public all or a substantial part of the contents of a database by on-line or other forms of transmission."[136] The Database Directive provides that the sui generis right may be assigned or transferred. The sui generis right, however, applies even if the copyright in the information contained in the database is held by a third party. The Directive also provides that the author of a database may not prevent extraction or re-use for a lawful purpose.[137]

Lawful users of a database may extract or re-use a

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[135] *Ibid.* Article 7.

[136] *Ibid.*

[137] Jane C. Ginburg, "Surveying the Borders of Copyright", (1994) 41 J. Copyright Soc'y USA 322.

substantial part of the database for "private" purposes (in the case of non-electronic databases). Lawful users may also extract or re-use material from the database for non-commercial teaching or scientific purposes, so long as the source of the information is indicated. The *sui generis* right also does not prevent extraction or re-use for "public security or the proper performance of an administrative or judicial procedure."[138]

There are several problems associated with this particular *sui generis* approach to protecting databases. As noted *sui generis* protection is not founded on a creativity or originality basis. Article 7 simply states that an owner of a database must demonstrate:

> that there has been qualitatively and/or qualitatively a substantial investment in either the obtaining, verification, or presentation of the contents to prevent extraction and/or re-utilization of the whole or of a substantial part, evaluated qualitatively and/or quantitatively, of the contents of that database.[139]

It is obvious that this Article was meant to be a catch all providing database owners with undeniable protection for

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[138] *Ibid.*

[139] Article 7 *European Directive supra* note 135.

their investments. The Directive however, does not define "qualitatively and/or qualitatively" and does not provide criteria as to what constitutes a "substantial investment".[140] While interpretation of these terms remains to be seen, the potential for further overprotection remains. This is especially true when considering that infringement can occur if a substantial part of the database is extracted or re-utilized. In generally accepted copyright principles, "a substantial part" is determined from a qualitative perspective. Under the Directive the determination can be made either qualitatively or quantitatively, thus taking a "substantial part" of a database regardless of the importance of the material taken. Davidson states the following:

> Consequently, the provision of protection simply on the basis of the degree of investment in the creation of the databases and the amount of the data extracted or re-utilised, confers far greater protection than that conferred by copyright. There is, in effect, protection of the data itself.[141]

Article 8 stipulates that authorized users may "extract

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[140]Terry Sanks, "Database Protection: National and International Attempts to Provide Legal Protection for Databases", (1998) 25 Florida State U. L. Rev. 991.

[141]Mark J. Davidson, "Sui generis or too generous: Legislative Protection of Databases, its Implications for Australia and Some Suggestions for Reform" (1998) 21(3) UNSW L. J. 729.

and/or re-utilize" only the parts of the database authorized by the database owner.[142] Who exactly qualifies as an authorized user is vague. More importantly since the database owner has the power to unilaterally decide what parts of the database, if any, are available to particular users, the owner can withhold information. This is very troublesome because it leads to the possibility that, regardless of fees paid or licenses agreed to, a database owner can still reject access to any part of his/her database. This type of power is extremely alarming due to the potential for severely restricted access to information.

Article 9 does specify an exception for teaching or scientific purposes but it does not address research that is of non-scientific nature such as historical research. The exceptions are very limited and vague. For example, extraction for "private purposes" is allowed but only from non-electronic databases.[143] Seeing as the number of digital

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[142]Article 8, European Directive *supra* note 137.

[150]Ibid. Article 9.

databases are exponentially increasing and the number of non-electronic databases are diminishing if not discontinued altogether in favour of electronic ones, this is hardly beneficial to database users. Article 9 in conjunction with the restrictions in Article 8 seriously impede user rights. The addition of Article 10 virtually removes user rights from the equation. Article 10 provides that the term of protection expires 15 years from the beginning of the year following either the date of completion of the database or the date when the database was first made available to the public. A substantial modification that results in a new versions of the database will qualify the resulting databases for an additional term of protection.[144] Even if only part of the database is substantially changed the entire database continues to be protected. Seeing as "substantial" is not defined in the Directive protection could conceivably be extended in perpetuity.

The *sui generis* system used in the EU does recognize the

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[144] *Ibid.* Article 10.

unique nature of databases. However, the fact that this *sui generis* protection is on top of copyright protection threatens the rights of users. Therefore, although the *sui generis* system takes into consideration the distinct nature of databases it does not appear to consider the unique role databases play in society today. Sanks in assessing the Directive states:

> Suppose that several years ago Historian A developed a database containing an analysis of weather conditions during wars throughout history. Now, Historian B wants to advance this database by creating one which included an analysis of the weather's effects upon technology used during all previously fought wars. Despite Historian B's willingness to pay a licensing fee, Historian A refuses to allow Historian B to use the original database. The Directive does not provide Historian B any legal recourse. Thus, under the Directive, when an individual collects information, however simple or generally known, she obtains legal protection after placing the information into a database.[145]

Should Canada Follow the European Example?

If Canada was to adopt such a system, combining copyright and *sui generis* protection, one would hope that the fair dealing provisions would be expanded to take into account the need for people to access databases as part of everyday

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[145]Sanks, *supra* note 140.

life.[146] It would be ill-advised for Canada, in light of the experience provided by 20 years of software litigation, to provide protection for compilations similar to that of software. The *Tele-Direct* case and the *Edutile* cases show that the judiciary may have been paying attention, though the risk of overprotection remains for works other than those completely devoid of any originality.

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[146] Brudenal P., The Future of Fair Dealing in Australian Copyright Law (1997) *The Journal of Information, Law and Technology (JILT)*. <http://elj.warwick.ac.uk/jilt/copright/97_1brud/>

> As copyright material becomes increasingly digitised, tensions have arisen between those controlling and using such material. Although digital technology provides significant benefits in disseminating copyright material, there are disadvantages. Digitised material may be easily reproduced or manipulated, and then further disseminated by the user - potentially damaging the copyright owner's market. This has led to a general perception in countries with strong copyright based industries, such as the United States and incentive for new digital works to be created. [See, for example (Information Infrastructure Task Force; 1995) and (Copyright Convergence Group; 1994)] As a consequence, current efforts at revising copyright laws have focused on ways by which protection of copyright works can be strengthened.
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> Enhanced copyright protection may, however, come at a price to users of information. As the exclusive rights of the copyright owner become stronger, users' rights of free access and use of material in digital form may be diminished. Without such rights, there is the real possibility of barriers being erected around information based products placing greater restrictions on the communication of ideas, with provision of material granted solely on the copyright owner's terms. The most significant right available to Australian users of copyright material under the Copyright Act 1968 (the Act) is the defence of fair dealing. Fair dealing allows for copyright material to be copied for certain purposes without permission if the dealing with that material is fair.

Providing copyright protection to compilations is even more detrimental to the rights of authors' and users' and public access to information than copyright protection of software. This is because in databases the overprotection which copyright may give, deals with the ownership of facts. Therefore, not only are we overprotecting the means by which digital information is retrieved but also the factual information itself. The historical foundation for this type of copyright protection is even more dubious for databases than for software. Polivy writes:

> ...attempts to balance incentives to authors, thought to encourage the creation of new works in the short run, with public dissemination of previously created works, thought to promote progress in the long run. The tension between author control and public dissemination is especially strong in "fact-works," which compile and present factual information, as compared with "works of fancy," such as music, sculpture, and dance. A decade before the Supreme Court decided Feist, Professor Gorman wrote that our law stresses the greater need to disseminate the contents of fact-works than the contents of works of fancy. As Gorman and others have pointed out, there is a strong public interest in access to facts and a widespread belief that we need such access to promote progress. First, facts are considered building blocks of intellectual activity that should remain in the public domain where they are freely available for use. In particular, the scientific community is committed to the free and unrestricted flow of data. Second, the expression in fact-works is often driven by and difficult to separate from the factual information itself. Because few varieties of expression are possible, similarities between fact-works may be considered non-infringing. Third, . . . the fair use provision in the Copyright Act expressly encourage free access to factual information to encourage commentary about social, political, and historical phenomena. Depriving the public of free use of facts could interfere with the marketplace of ideas and hinder public discourse. Lastly, the author's principal contribution to the creation of a fact-work may be "sweat"--expense, time, and effort. Collections of facts do not comport with a romantic

> notion of authorship; rather, fact-works are "personality-deprived." To the extent that copyright is viewed as protecting works because they are rooted in or extensions of authors' personalities, fact-works will rarely qualify.[147]

Regardless of the impact that copyright protection of compilations has on the rights of users, authors and public access to information, one thing is clear: data compilations are a multi-billion dollar industry.[148] The aim of this industry is to protect its product and thus further profit from the selling of information. However, some end users such as scientists, have a different perspective. Access to scientific databases is vital to the world of science. Success in scientific research requires the full and open availability of scientific data.[149] In fact, society as a whole benefits from having access to data and information. However, as with software the compilations industries, are very powerful and continuing to press for

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[147]Denise R. Polivy, "Feist Applied: Imagination Protects, But Perspiration Persists--The Bases Of Copyright Protection For Factual Compilations", (1998) 8 Fordham Intell. Prop. Media & Ent. L.J. 773.

[148]John Tessensohn, "The Devil's in the Detail: The Quest for Legal Protection of Computer Databases and the Collections of Information Act. HR 2652 (1998) 38 IDEA: J.L. & Tech. 439. The estimated revenue from the US database industry range from 4.5 to 200 billion.

[149]www.nap.edu/readingroom/books/BitsOfPower/index.html, visited 12/5/99.

legislation which restricts access. Bill H.R. 3531, entitled *Database Investment and Intellectual Property Antipiracy Act,* and Bill H.R. 2652, entitled *Collections of information Antipiracy Act,* are two examples of attempts to bring a *sui generis* system of protection for databases to the US. Both of these bills go even further than the European Directive in overprotecting databases and limiting user rights.[150] Thus far, neither of these bills have been passed into law. An attempt by WIPO in 1996 failed to win approval from the international community. The preamble to the failed WIPO Database Treaty states:

> recognizing that databases are a vital element in the development of a global information infrastructure and an essential tool for promoting economic, cultural and technological advancement, recognizing that the making of databases requires the investment of considerable human, technical and financial resources but that such databases can be copied or assessed at a fraction of the cost needed to design them independently, and desiring to establish a new form of protection for databases by granting rights adequate to enable the makers of databases to recover the investment they have made in their databases and by providing international protection in a manner as effective and uniform as possible...[151]

The preamble of the WIPO Draft Database Treaty and the

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[150]Davidson, *supra* note 141.

[151]Basic Proposal for the Substantive Provisions of the Treaty On Intellectual Property in Respect of Databases to be Considered by the Diplomatic Conference, **http://www.loc.gov./copyright/wipo6.html, visited 12/5/99.**

aforementioned Article 1 of the European Directive adhere to the equivalent of the "sweat of the brow" doctrine. However, unlike Europe, which was largely responsible for the drafting of the WIPO treaty, the rest of the world was not ready to adopt such a position. Uncertainty regarding database protection is the rule rather than the exception.[152]

Upon reviewing the Directive and US bills attempting to protect databases, Davidson states:

> One is left with the impression, from a study of these provisions, that the moves to protect databases were prompted almost solely out of concern for the interests of database makers and with little regard to the public interest in access to data....This impression is confirmed by the lack of effective provisions in the *Directive* or the *Bill* concerning databases consisting of information exclusively within the control of the database maker. A particular concern arises where the maker of the database is the same legal person who generated the data or is the exclusive licensee of that person.[153]

The concern over information that can only be gathered from a sole source also applies to situations where the information in question relates to such a specialized field that the costs involved in producing the database are so large that they do not justify the creation of multiple

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[152]Hill, *supra*, note 98.

[153]Davidson, *supra* note 141.

databases. The end result is a monopoly on information. Either there is no other means of obtaining the information or costs are prohibitive such that they negate the option of gathering the information independently.[154]

Given the trend of trying to provide *sui generis* protection for databases, how should Canada proceed in this area? The foregoing analysis makes one thing clear: databases, like software, are functional tools. This assertion is best supported by the fact that a *sui generis* system is seen as necessary due to the functional nature of databases. They are not original, creative works. They are tools used to manage information. They are, in fact, commonly referred to as tools. If Canada decides to continue protecting databases under copyright, then the current judicial thinking is accurate. Protection under copyright should be limited to the elements of the database which demonstrate authorial originality and creativity. If Canada decides to enact a *sui generis* system of protection, it should be formulated with society's needs in mind. There

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[154] *Ibid.*

should be a balance between the owners of the databases and right of the public to access the information. This balance should err in favour of society and not the owners. Information is unlike other commodities, it is vital not only to the growth of a society, but to the development of individuals in that society. In assessing the need for a *sui generis* system in Australia, a country quite similar to Canada, Davidson states:

> Given the existing protection for databases available from copyright law, contract law and the use of technology to restrict access to them, the question arises whether additional protection should be provided at all. This is particularly the case in light of Australia's position as a net importer of intellectual property. Once created, a new intellectual property regime is difficult to do away with, even if the original justification for the intellectual property regime was questionable. Similarly, once Australia joins the an international property regime, the costs of withdrawal may be so great as to make that impossible. Various economic analyses of patent protection, for example, suggest that it would be inappropriate to institute such a system today. If we did not have a patent system, it would be irresponsible on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it. It would be regrettable if a similar error were made in respect of databases. The empirical evidence justifying the establishment of protection for databases is limited. The push for protection is based on economic theory and the lobbying of interested pressure groups. One consequence of this is that there has not been sufficient evidence accumulated as to the need for database protection, the potential negative impact of such protection or the need or exceptions to any protection that may be granted in order to offset that negative impact.[155]

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[155] *Ibid.*

The negative impact of overprotection is also contemplated in the US, where one side states, "our concern is that modern science depends critically on free an full access to data. It's the type of data that has a very real impact on people's lives."[156] On the opposite side, according to Bruce Lehman the US Patents and Trademarks Commissioner, people who are used to accessing information for free will have to start paying for it.[157] As with software, the availability of technological methods of protection, various other legal protections and copyright may lead to monopolies of information. As we have seen from the case law in the US and Canada, it cannot be taken for granted that courts will not protect factual databases. The case law in both countries is far from settled.

It would be a grave mistake for Canada to start legislating in this area. The need for further protection is far from evident. Given Canada's economy, information technology industry and the unsettled nature of the law in

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[156]John Gibeaut, "Zapping Cyber Piracy", (1997) ABA Journal, February.

[157]*Ibid.*

other jurisdictions, enacting a new intellectual property regime would lock us into something we will most likely regret. However Canada, unlike Australian may not have the luxury of avoiding the entire situation. Because Canada is part of NAFTA, it may find itself with little choice but to adhere to provisions of database protection treaties negotiated under this structure. Exacerbating this is the fact that Canada is US's largest trading partner, home of some of the largest database publishers in the world. Because of this, it is important that the judiciary continue to take a narrow view of the scope of protection, using authorial originality and creativity as basis for protection. This would limit the potential negative impact of legislation in this area in Canada. Canada's clearest advantage is the confusion in the international arena as to how to protect databases. This international uncertainty provides Canada with time to consider its options and perhaps start a dialogue with countries such as Australia in order to provide a united alternative to the database publishers.

Conclusion

Information is the most valuable resource a society can possess. Information management tools, which also serve a purpose as tools to accomplish everyday tasks ought to be as widely available as possible. Innovations in the gathering and distributing of information, as well as, advances in technological tools need to be encouraged. The use of copyright to legally protect these information technology tools accomplished neither goal. Software and databases need to be seen for the functional tools they are and not as literature due to a superficial resemblance. As we have seen throughout copyright's history, there has been an attempt limit monopolies on facts, information and functional tools. The use of copyright, in conjunction with other methods of protection, particularly technological ones provides far too much protection for such works. In establishing a legal protection scheme for such works the needs of the greater society must be fully addressed. Since software and databases are not like traditional copyrightable works, if a more appropriate system of protection, one based primarily on the access to

information by users, is not politically willed then the scope of copyright protection afforded to these works needs to be narrow. Protection needs to be in accordance with evolved copyright principles of rewarding original, creative, authorial expression of an idea and limiting monopolies by allowing ideas and facts to be part of the public domain. Issues concerning user rights, authorial rights, overprotection via legal and technological methods and functionality are common to both software and databases. Furthermore, more often than note they are used together. In fact, electronic databases are useless without software to access the information. Also, the owners of these products are frequently the same entity. Software and databases need to be assessed both as individual products and as counterparts in order to better understand the need for reconsidering copyright or *sui generis* protection for software and databases. In any event, the paramount role which these products play in our society needs to be the leading interest considered when legislating in this area.