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CONTRACTING FOR THE SALE AND PURCHASE OF
COMPUTER SOFTWARE

Moderator: ROGER W. SMITH
Panelists: JOAN CLARK*
 DEAN A. MONCO**
Recorder: THOMAS P. EDWARDS

- o Turning a data processing center into a profit center
- o Licensing your computer software
- o Legal problems in the development of computer software from the employer-employee perspective
- o Contracting for the development of computer software

MR. DEAN A. MONCO: My presentation concerns the potential development of a regular patent and licensing program within the insurance industry and pension management profession for the purpose of turning the data processing centers used by the insurance industry, both in-house and outside, into profit centers.

The insurance industry and the pension development and maintenance profession are extremely information-intensive. Tremendous amounts of information must be gathered on individuals, their ages, locations, conditions of health, as well as scores of other aspects of their lives. This information is collected for millions of individuals, sorted and assimilated by information processing equipment. Projections and estimations are made from this information. Extensive information is also collected on automobiles, property, and businesses--as well as just about anything else that can be insured.

Information needed to develop and maintain individual insurance companies and pension programs must also be collected, synthesized, and analyzed in order for profitable businesses to be maintained and expanded. Information regarding cost control, cost factors, as well as potential liabilities must be collected and reviewed in order that maximum profitability may be achieved.

* Ms. Clark, not a member of the Society, is a Senior Partner with Ogilvy Renault.

** Mr. Monco, not a member of the Society, is with Cook, Wetzel & Egan, Ltd.

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All of this information gathering, synthesis, and analysis is made possible through the development of the computer--both its hardware and, more importantly, software. Tens of millions of dollars are expended each year by the insurance and pension fund management industries to develop integrated software programs which are capable of processing the information gathered. Typically, this software is developed in an in-house data processing center or from an outside software developer. Use of the software is restricted to in-house applications. The only protection usually provided for the developed software is the placement of a copyright notice somewhere in the program itself.

An alternative to this current practice would be to license, under appropriate conditions, appropriately protected software to competitors in the industry as well as third parties outside of the insurance and pension fund industries who may have a need for such information processing capability. A recent change in the United States (U.S.) patent laws has made possible the protection of software under the patent statutes which, in turn, provides for licensing the developed software on a wide scale.

The best available protection for computer software is a patent. Under U.S. law, a patent may be obtained on any process, machine, article of manufacture, composition of matter, or any new or useful improvement thereof. A patent provides its owner, whether that is the inventor or the inventor's assignee, with the exclusive right to make, use, and sell the patented invention for a period of 17 years. In plain English, a patent gives its owner a license to bring a lawsuit. It provides its owner with a limited legal monopoly regarding the invention disclosed and claimed in the patent.

A patent consists of six parts: an abstract of the invention, history of prior art, summary of the invention, drawings, if appropriate, description of the preferred embodiment (sometimes called a specification), and the claims of the patent. The claims are the most important part of a patent because they define the scope of the invention. A court examines the claims of the patent to determine if it has been infringed.

The claims of a patent must be supported by the disclosure in the specification. Nothing can be claimed which has not been disclosed in the specification.

For patents pertaining to software, the specification should describe in detail flow charts which illustrate the steps required in the software to provide the required information. The claims of a patent for software are usually expressed in terms of a process or a method.

After a patent application is filed, it is examined by a Patent Office Examiner, and the claims are compared with the prior art--typically other patents. If the examiner believes that any claim in the application contains material previously disclosed in the prior art, he will issue an Office Action rejecting that claim. The applicant's attorney will then file a reply. The whole process for allowance generally takes 18-24 months.

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From the definition of patentable subject matter, it would certainly appear that a programmed computer, which is a machine implicating a process, would have been appropriate subject matter for patent protection. However, for nearly two decades, the U.S. Patent Office refused to extend patent protection to computer hardware and software, stating that the software constituted "mental steps" involving mathematical calculations which would not be proper subject matter for patent protection. The court felt that by permitting patent protection to extend to computer software, it would be giving the inventor the exclusive right to use the equivalent of a mathematical formula.

Lower courts attempted to apply the distinctions made by the Supreme Court regarding the patentability of claims in which algorithms formed part of the claimed subject matter. The distinctions which the lower courts made were unclear. In 1981, the Supreme Court, in two companion cases, Diamond vs. Diehr and Diamond vs. Bradley, stated that computer related machines and processes will not be considered any differently than other machines and processes merely because a computer program is involved in performing apparatus functions or method steps. While a mathematical algorithm still cannot be patented, incorporating a software program into an operative embodiment enables a software developer to claim the computer program.

How is a patent application for a computer program prepared? First, a simple block diagram is used to illustrate an operative embodiment. The program is then described by means of a flow chart and its placement in the machine. The machine now has a functional capability to do certain tasks. The actual program listing is attached as an exhibit to the application.

When drafting patent claims, they are described in terms of both means and function and process claims. That is, you claim a machine executing a program having a certain functional capability to achieve a certain result. You then prepare additional claims directed to the process by which a particular result is achieved. Using this procedure, you can claim a mathematical algorithm in a dependent claim because it is a part of an independent process claim or means-plus-function claim.

The scope of protection available in a patent depends upon the scope of claims allowed by the Patent Office. There should be at least one broad, independent patent claim employing means language which is as general as possible, while still being supported by the specification, and a more narrowly drafted, independent claim having much more detail and generally tracking the invention disclosed in the specification. Multiple dependent claims describe and claim the actual apparatus and software used.

The specification will have to be prepared with a sufficient amount of detail such that a person reasonably skilled in the art of designing computer software could reconstruct the invention without that person exercising any inventive efforts. In the case of an application for software, a specification should be prepared in the form of a detailed

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flow chart rather than in the form of a listing of specific computer instructions.

A flow chart is a general description from which an almost infinite number of instructional steps could be drafted. Therefore, the description of the preferred embodiment in the form of a flow chart itself provides a broad outline of the invention which will not be easily evaded.

Copyright and patent protection are available for computer programs. If the actual steps of a copyrighted computer program are printed in a patent application, there is some question as to whether the copyright protection would be lost by having it printed in this publication. A patent provides a monopoly to an inventor for a period of 17 years. In exchange, all rights to that invention are surrendered at the end of the 17-year period. How this would affect a copyrighted program disclosed in a specification is still the subject of dispute. Since disclosing the step-by-step process is not necessary, it should be avoided.

Perhaps the most important consideration involved in determining whether to file a patent application on developed software is the cost of the application itself. The U.S. government charges \$500 for filing a patent application plus a \$500 issuance fee upon allowance. Additionally, variable maintenance fees are charged in order to maintain the patent on an active status. An attorney may typically spend 20-30 hours on a patent application, although difficult applications may require double that time. The application for U.S. Patent No. 4,460,975, dealing with computer printouts, cost approximately \$6,000 to prepare and was allowed upon first examination without any Office Action issuing from the Patent Office. This is a highly unusual case. The inventor felt it was a worthwhile expenditure because he intends to actively market the inventions disclosed in the patent. Obviously, whether or not to file a patent application on particular software will depend on the significance of the invention and the use to which the inventor or his assignee intends to put the invention.

The penalties for patent infringement can be quite severe. A preliminary injunction to stop the use of patented software would generally not be available unless the patent has either been previously judged valid or is a patent widely recognized in the market as being valid. This is typically done by having several licensees to the patent. Injunctive relief is certainly available after a trial on the validity and infringement of the patent.

Damages for infringement are specifically provided for by statute and will in no case be less than a reasonable royalty. In a typical infringement case, the owner of the patent will try to recover lost profits. In order to establish this, the owner must demonstrate his capacity to step in and make the sales of the infringer.

With patented software, determining damages would be more difficult. The software itself is not usually a product which is sold in the marketplace, per se. If it is licensed in the market, the royalty charged would be the market rate plus a premium for the infringement.

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If the value of the program is to save money, a more appropriate standard would be how much money has been saved by the infringer over the specified period by using the patented software.

A patentee can establish these damages through reasonable extrapolations from figures provided by the infringer in comparison with its own. While damages cannot be speculative, all doubts will be worked against the infringer. Additionally, prejudgment interest will be awarded, which can be substantial if market interest rates are used by the court.

For cases of deliberate and willful infringement, triple damages and attorneys' fees may be awarded. While clear and convincing proof will be required, these penalties may be appropriate in the context of computer software when data processors leave a company and go to work for a competitor subsequently using the information and knowledge from their previous employer.

The next form of protection available to owners and developers of computer software is trade secret protection. A trade secret has been defined by the American Bar Association as:

any information, including formula, pattern, compilation, program, device, method, technique or process that (1) derives independent economic value, actual or potential, from not being generally known to and not being readily ascertainable by proper means by other persons who can obtain economic value from its disclosure or use and (2) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

In plain language, a computer program is definitely a trade secret if it can be determined that it has an economic value to someone else; that it cannot be derived from "reverse engineering"; and that the developer and/or owners of the computer program do what is reasonably necessary to keep it a secret.

Does a trade secret have to be novel? If it does not have some novelty and is well-known, it does not have any real commercial value. Does a trade secret patent program have to possess the same level of novelty as a patented computer program? No. The level of novelty required in a trade secret is lower than that required for a patent.

What steps are necessary to maintain a computer program as a trade secret? Generally, a software developer should use employment agreements having nondisclosure provisions for confidential information. Although such agreements are not necessary in every jurisdiction in the U.S. to bring a trade secret action, having such an agreement enhances the position of the developer and increases the chances of getting a preliminary injunction to prevent disclosure of the program.

Noncompetition agreements should also be signed by key employees involved in the development of the computer program. The noncompetition agreements will generally be enforced if they are reasonable

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regarding restrictions on duration, geographic area, and prohibited activities. Generally, a 20-year restriction on competition will be considered unreasonable while a 2-3-year restriction will be considered reasonable. To justify restricting a former employee from competing throughout the U.S., a developer would have to establish that he does business actively throughout the U.S. and that the former employee would cause economic difficulty wherever he went.

Courts like to protect people's right to earn a living. Therefore, a former employee could not be prevented from working on all computer software development. But, an employee can generally be prevented from competing with his employer in the development of software reasonably related to what he was working on during his employment. Again, reasonableness of restriction is key in determining whether a covenant not to compete will be enforced.

If a developer/licensor wants to license a computer program maintained as a trade secret, what should the licensor do? The licensor should require the licensee to: (a) acknowledge the confidential nature of the software which is licensed; and (b) restrict the number of licensee's employees who will have access to the source code. A licensee's employee should be specifically designated in the agreement, and if the licensee wants to add any employees to the original designated list, the new employees will be required to acknowledge and sign the agreement. It is important to acknowledge the difference between source code and object code in relation to trade secret law. Courts will generally permit access to object code since object code is comprised of symbols which are unintelligible to everyone except a computer. Source code, however, must be restricted by the licensor because it is capable of being understood by humans.

Other provisions which should be contained in any license agreement are that (c) disclosure of any aspect of the program is to be done only in conformity with the terms of the agreement; (d) the obligations of confidence contained in the agreement by the licensee and its employees will survive any termination of the agreement; (e) all copies of the software will be returned to the licensor upon termination of the agreement; and (f) the agreement should specifically provide that any major modifications to the software will be disclosed to the licensor and that they will be owned by the licensor. These provisions are a broad outline for protecting software maintained as a trade secret.

The penalties for theft of a trade secret can be quite severe. Courts have found it difficult to assess the value of the loss of a trade secret because unlike patent law, the owner of a trade secret only has rights against the person who actually stole the trade secret. Innocent users of a stolen trade secret are not liable. Courts will look to a program developer's development costs as well as profits which might have been made. If no damages can be determined in that fashion, a court may look to the profits of the defendant to determine damages. If the misappropriation of the trade secret was considered willful and deliberate, punitive damages and attorneys' fees might also be awarded. However, the level of proof required to establish willful misappropriation is quite high.

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When do you apply for a patent on a software program, and when do you maintain the same program as a trade secret? Each choice will have certain advantages and disadvantages. With a patented software program, the program itself will be disclosed to the world in exchange for a 17-year monopoly right. If it is anticipated that the computer program will be in use for an extensive period of time, even if not 17-years, patent protection may be more advisable.

If the Patent Office allows only relatively narrow patent claims for protecting the software, then as a fall-back position, the patent issue fee need not be paid, and the patent itself will go abandoned. The abandoned application, however, will be maintained in secrecy in the Patent Office. The computer program can then continue to be maintained as a trade secret.

If an extensive licensing for a particular program is desired, patent protection may also be advisable for the simple reason that the more people who know about something the more difficult it will be to maintain it as a trade secret. Even with the utmost of care, a wide-ranging licensing program for computer software may be difficult to keep secret. Additionally, a patent will enable the patent owner to file suit against both innocent and willful infringers.

On the other hand, patent applications cost money. If a software developer wants only a limited licensing program for the developed software, and if the licensor is reasonably certain that a software program can be maintained as a trade secret, then that might be the appropriate vehicle to use in a licensing program. All of these factors must be taken into consideration when making this decision.

The third form of protection available for computer programs is copyright protection. The original Copyright Act of 1909 protected works of authorship in the commonly known areas of literature, music, drama, pictures, sculptures, and motion pictures. In 1976, the definition was broadened to include:

original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.

In order to register a computer program, a simple form must be submitted along with two copies of a published work or one copy of an unpublished work. The Copyright Office will accept a copy of the first 25 pages and the last 25 pages of a program printout, which can consist of printouts plus one page containing the copyright notice (a small c in a circle) next to which is the name of the creator and the date of the creation. For practical purposes, if you want to obtain protection of a computer program but avoid disclosing that program through registration in the Copyright Office, limit the first 25 and the last 25 pages to routine instructions or report layouts. The problem-solving algorithm of the program should be kept in that portion of the program not submitted to the Copyright Office.

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While the Copyright Office prefers the registration of a copy of the source code, it will accept the submission of an object code form. Because it is basically unintelligible, a registration in object code form would effectively shield the owner of the copyrighted material from misappropriation.

Copyright protection for software for computer programs developed after January 1, 1978, will continue for a term consisting of the life of the developer plus 50 years after the developer's death. The length of protection which is afforded to copyright holders is obviously much greater than the 17 years provided under the patent laws. However, the scope of protection is decidedly more narrow.

How is copyright infringement established, and what penalties may be incurred for such an infringement? At the outset, understand that two software developers working on the identical problem may achieve the identical result using an identical algorithm and not infringe either's copyright. That is simply because both parties developed or created their particular program independently of one another. Originality, not novelty, is the standard for copyright protection.

A rule of thumb for a party charging copyright infringement is to establish access plus similarity. To establish access, a software owner must establish either actual access or such close identity between the products that there was no other way for an infringing party to develop the software except by means of copying it. The degree of similarity between computer software must be substantial. A software developer cannot protect an idea but may only protect the embodiment of that idea. Because the program itself, rather than the claims relating to a generally descriptive flow chart, is what is copyrighted, dozens of variations of the same program, while possibly infringing claims of a patent, will not infringe a copyright.

To put an immediate halt to infringing activities, a copyright owner may wish to seek a preliminary injunction. This remedy is difficult to obtain and should be attempted only in the most clear-cut of cases. In order to obtain a preliminary injunction, two factors must be established: (1) likelihood of success and (2) irreparable harm to the copyright owner from the continuation of the infringement.

The existence and ownership of a copyright may be established by attaching the registration statement to the complaint.

In order to establish infringement, there must be clear and convincing evidence that the alleged infringer was copying the work, and there must be substantial similarity of the copyrighted work to the infringing material.

U.S. statutes provide for the election by the copyright owner at any time prior to trial of either statutory damages or actual damages in profits. To recover statutory damages, the copyright must be registered before the infringement occurs. Statutory damages are provided in a range of \$250 to \$10,000 for each work which is infringed. This may be increased to \$50,000 per work if the infringement is willful.

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A copyright owner may choose to collect actual rather than statutory damages. Actual damages can be determined by calculating the diminution in the value of the copyright in the marketplace. This would usually be done through the testimony of expert witnesses. Recovering lost profits for copyright infringement is similar to obtaining the proof required in patent infringement actions. The copyright owner must establish that the infringer is capable of meeting the demand of the market for the product and the estimation of the damages must not be speculative. Again, doubts regarding the amount of damage will usually be resolved in favor of the copyright owner. If the infringement is proven to be willful, additional damages of attorneys' fees and the statutory punitive damages of \$50,000 can also be awarded.

As a summary, the patent:

1. requires novelty;
2. lasts 17 years;
3. provides broad conceptual protection as defined in the claims;
4. will stop innocent infringement, independent creations of the same or similar product, as well as willful infringers.

A trade secret:

1. requires that it has some value in the marketplace.
2. will last as long as the owners maintain it as a trade secret and is not discovered by legitimate, independent efforts.

A copyright:

1. requires originality only;
2. will last for the life of the author plus 50 years;
3. provides narrow protection against copying only;
4. cannot stop identical or similar independent creations by another party.

You should be aware that patent protection and copyright protection are available for the same software. Trade secret protection and copyright protection are available under the limited disclosure steps to the Copyright Office. However, trade secret protection and patent protection are not simultaneously available as they are considered legally mutually exclusive. Choosing one precludes the other.

A patent provides the best protection for computer software, so I will now discuss the set-up for an in-house patent program and an external licensing program.

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The first step is determining whether developed software merits the expense of filing a patent application. Failing to file a patent application may cause a loss of earnings from potential licensees. Indiscriminate filing of patent applications can be quite expensive and will certainly not be effective in any cost-benefit analysis. Therefore, sound judgment from several perspectives should be exercised.

Patent applications should be filed:

1. when the generation of royalty income is likely;
2. when the software will provide a perceptible competitive economic advantage in the marketplace; or
3. when software will provide a significant cost control and, hence, add numbers to the bottom line.

The decision to file an application should be made by a committee consisting of input from at least the following persons:

1. the inventor, who may be able to provide information regarding the prior art and the effort involved in developing the software;
2. a marketing person, to determine the potential value of the developed software to a competitor or a third party;
3. a financial person, to determine the value of the software from an internal cost-benefit analysis; and
4. a patent attorney, to render advice regarding the patentability of the subject matter.

Whether or not it is decided to file a patent application for a particular software product, it would be most advisable for persons in the data processing and software development centers to maintain an accurate log of their activities. A suggested form generally comprises the following:

1. the inventor's name, address, and relationship to the company, either as a direct employee or independent contractor;
2. the title of the invention;
3. the date when the concept of the software program was written, which can include a flow chart;
4. the location of such a first description;
5. the date of the first oral disclosure to anyone else;
6. the time taken to develop the software program;
7. a periodic log of the developmental activities of the programmer;
8. the date when the first software program was completed;

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9. a record of any refinements which were made;
10. a description of the program's intended purpose; and
11. any related printed publications, patents, or patent applications which the software developer was aware of prior to or during the development of the software he was working on.

It is necessary to establish this information for the Patent Office in order to determine the date of first reduction and due diligence in development. The primary purpose of such records is for use in what are called patent interferences in which two or more inventors claim a priority on the developed subject matter. These records should be kept in a regular systematic manner. Written records would be essential in any conflict between two inventors in the Patent Office.

Once the decision is made to patent a particular software program, the next step is to select potential licensees for marketing the product. One category of potential licensees would be competitors in the industry whom you know may be interested in this particular piece of software. A competitor may be approached by an introductory letter which serves as an invitation for a further meeting to describe the product in some detail and determine if there is any initial interest. Following this, a demonstration of the software package and the results achieved may be presented to the potential licensee. Since the software program is patented, the patent itself is a public document and may be disclosed to a competitor. However, if only a patent application has been filed and no patent has as yet been issued, then the amount of disclosure should be limited, possibly to selected portions of the flow chart. None of the claims submitted to the Patent Office should be disclosed until the patent, in fact, has been issued.

If a potential licensee is interested in the program, it will be important to have the terms of a license agreement prepared, including initial proposal for royalty rates. If the primary benefit of the software program is cost control, then a financial projection of such savings should also be available to present to the licensee.

An examination of potential users outside the insurance industry should also be made. Selections can be based on the needs of other industries, either to process similar information to that used in the insurance industry or pension management profession or who might have a need for particular business software developed in these businesses. Potential licensees should be reputable companies with no history of involvement in patent infringement or theft of trade secret actions.

When negotiating a license agreement, consider how many persons or companies the licensor may want to license. Obviously, an exclusive license will command a larger premium. On the other hand, more licensees may generate more income. A licensor may not want to license more than a few competitors because its own benefits may be diminished from too wide a market. These are business decisions which have to be considered at the time of determining whether to file a patent application.

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Consider the likelihood that a licensee will profit from the license. If the licensor can demonstrate that other licensees have benefited greatly from the license, it will add great impetus to a potential licensee taking a license. If you are negotiating your first license for this particular piece of software, projection figures on cost benefits should be available for presentation to a licensee.

Consider how long the license will last. The licensor prefers to have a long-term agreement while a licensee prefers greater flexibility to terminate the agreement. The maximum term for licensing the patented product is the remaining life of the patent. No royalties can be collected by agreement of parties after termination of the patent. How long a license will last will depend on the benefits both parties perceive in the patented software as well as the estimated viability of the program itself.

Determining the appropriate royalty for software can be fairly complex. It can be approached several different ways.

First, what would be a reasonable return to the licensor? Major factors are cost development, including time and personnel as well as any capital expenditures made. Second, what would a licensor consider a reasonable profit, given these levels of expenditure? Third, what would the benefit be to the licensor in maintaining the patented software in-house versus licensing it to competitors or third parties?

Another approach is to consider the cost benefit picture for the licensee in relationship to the best available alternative. Important questions are (1) using the technology at the risk of a lawsuit, what is the likelihood that the licensor would discover that we are infringing his patent, and what are the potential penalties if such discovery is made?; (2) can the potential licensee independently develop software which can perform the same task and which is outside the scope of the claims of the patent? This will involve considerations of costs including time and manpower as well as any capital expenditures which might have to be made; (3) can a licensee obtain comparable, noninfringing software from a competitor; or (4) simply avoid using software within the scope of the patent claims?

It is a general principle of U.S. law that royalty rates can be as high as the market will bear. A licensor may not use a patent license to tie in the sale of nonpatented items to the patented product. This is a misuse of the patent and considered a violation of antitrust laws.

Different royalties or royalty rates may be employed so long as they do not result in any perceptible anticompetitive effects. It is obvious that a fifth licensee in the market will not pay the same rate as the first licensee in the market. However, the law will not permit using differential license rates as a way of destroying or injuring competitors in the marketplace.

MS. JOAN CLARK: A patent in Canada as in the U.S. may be obtained for an invention, which is defined as any new and useful art, process, machine, manufacture, or composition of matter, or any improvement

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thereon. I often consider a patent to be a negative right. It does not give the owner the right to do anything, but it gives him the right to prevent others from doing that which is patented. The construction of the patent in Canada is, by and large, the same as that of the U.S. The process of filing applications is approximately the same; it is perhaps not quite as complicated in the U.S.

There is one interesting recent development of some concern to Canadians that was included in one of the budget papers tabled in the House of Commons on May 23, 1985. Our government is trying to cut costs, and its attempt to do so in this case is included in its paper called "New Management Initiatives." In it, the Deputy Prime Minister announced that about 80 percent of the applications filed in Canada have American counterparts, and the remaining 20 percent are largely applications previously accepted in other jurisdictions, with fewer than 500 patents a year filed solely in Canada. He concluded from this that "duplication and costs" in the Canadian Patent Office "would, therefore, be substantially reduced if Canada were to accede to the Patent Cooperation Treaty and accept foreign examination results." He also stated that, in addition to having examination of patent applications carried out in Washington, the Canadian Patent Office would contract with international searching authorities for the actual examination of the patent. This is something that many bodies, including the Patent and Trademark Institute of Canada, are objecting to because the law of Canada requires a bilingual capacity which the other countries do not have. In any event, as we stand today, search examinations are fortunately being carried out in the Canadian Patent Office.

As to the history of software patentability in Canada, it is much the same as in the U.S., although we are a bit behind you. This is not only because we do not have the quantity of applications or case decisions to build up our jurisprudence as quickly. It is stated in our Canadian Patent Act that no patent shall issue for an invention that has an illicit object in view or for any "mere scientific principle or abstract theorem." Therefore, the issue has been whether computer programs and computer software fall within the definition of invention, while at the same time not being the expression of a scientific principle or a mathematical formula. We have to remember that the patent act was written many years ago, when computers and software were not even envisaged, so we have to interpret these general words in the light of modern technology. In Canada, the position has been that computer programs and software were not patentable, but in recent years, there has been a softening of that opinion. We, in fact, perhaps through some independent thinking, have been following and sometimes paralleling closely the development of jurisprudence in the U.S. The Schlumberger case was reported in 1981 in Canada. Although the results were difficult, it is based upon the same principle as in the Diamond vs. Diehr and Diamond vs. Bradley cases.

The guidelines in the Canadian Patent Office were first issued on computer software in 1971, and they were changed in 1978. While I think the courts have gone ahead of these guidelines, they do require that there be something in the computer hardware which is patentable and to which the patented invention applies.

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The Schlumberger case involved an invention with which measurements were obtained from drilled boreholes. These measurements were recorded on magnetic tapes and transmitted into a computer programmed according to a number of mathematical formulas. The measurements were then converted by computer into useful information provided in readable form for humans. The Court of Appeals in Canada held that this program was not patentable because it consisted of "the discovery of various calculations to be made and of the mathematical formulae to be used in making these calculations. If those calculations were not to be effected by computers, but by men, the subject matter of the application would be purely mathematical formulae and a series of purely mental operations. As such, in my view, it would not be patentable."

The judge quoted from the law and then he said, "As I understand, the appellate's contention is that these calculations are not mental operations, but purely mechanical ones that constitute the various steps in the process disclosed in the invention. If the applicant's contention was correct, it would follow that if the use of a computer were prescribed to perform the calculations described in a specification, this mere fact would have the effect of transforming into patentable subject matter that which otherwise would be clearly not patentable. The invention of the computer would then have the unexpected result of giving a new dimension to the patent act by rendering patentable that which under the act as enacted is clearly not patentable. This, in my view, is unacceptable. I am of the opinion that the fact that the computer is or should be used to implement discovery does not change the nature of that discovery. What the appellate claimed was an invention here was merely the discovery that, by making certain calculations according to certain formulae, useful information could be extracted from certain measurements. This, in my view, is not an invention within the meaning of Section 2."

In other words, writing a computer program to carry out a process which is old and already known or a process which is merely an expression of mathematical formulas would not make the computer program patentable subject matter. However, if a new process were discovered, such as a production method involving perhaps heating a compound for a certain period of time, cooling it, dipping it in a chemical solution, and so on, and if that process by itself were new and useful and not obvious, then that process would be patentable, even if in carrying it out, software was involved or perhaps necessarily involved. In fact, patents have been issued in Canada on elevator control mechanisms operated by computer.

The cost of filing a patent application is a timely topic because our government is seeking funds and will raise the government fees in Canada as of the first of July 1985 quite substantially. For instance, on the filing of a patent application by other than a "small entity," they will be raised from \$150 to \$300, and for filing a patent assignment application, which is usually filed when you file the patent application, they will be raised from \$25 to \$100. This may not be much in the overall scheme of things, but it can be a lot for a large corporation.

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The penalties for patent infringement are less severe in Canada than in the U.S., whereas we will see later that the potential penalties for copyright infringements are much greater in Canada. As far as patents are concerned, damages are compensatory but not punitive, and we do not have the principle or the practice of awarding triple damages. In the event of willful infringement or of various nefarious dealings on the part of the defendant, there may be the award of solicitor and client costs in exceptional circumstances.

Patents form a relationship between an employer and his employee. Consider the two extremes of the spectrum. Let us say an invention was developed by an employee within the premises of his employer at the request of his employer, as part of his function, and with the material of his employer. That invention will obviously belong to the employer. On the other hand, if the employee, at home on his own time with his own material, and without being specifically requested to do so, should develop an improvement or a patentable invention, that would probably belong to him. There are, of course, borderline cases, as it often happens that the employee uses perhaps the computer or the materials of his employer. The nature of the work might be borderline, in that the invention might relate to the work he is required to do as part of his duties. There is also a distinction to be made between an invention developed by a person who is a director as opposed to a person who has a nonmanagement function and who does not have the obligation of overseeing the general development of progress of the company. Should an employer be interested in encouraging employees to make inventions that belong to the employer, sometimes it is stated in the employment contract that any such inventions relating to the inherent sphere of activity of the employer will belong to the employer, with certain compensations. Sometimes they are minimal and sometimes they are handsome compensations. It is sometimes worthwhile for an employer to encourage that kind of activity by the employee.

In Canada we have no particular definition of a trade secret. Sometimes our courts refer to the definition in the Restatement of Torts in the U.S. A trade secret is something that is not generally known to the public, has an economic value to its owner, and has been developed usually by or for the owner for the owner's advantage. The rights to a trade secret can arise in different ways: sometimes by contract (e.g., when an outside independent contractor is engaged to develop something, and the contract states that whatever is developed will belong to the employer); sometimes by the fiduciary relationship of the developer of the trade secret and the potential owner; and sometimes simply because a piece of information is imparted from one person to another in confidence. Lord Denning, in a leading case in England, stated that the law of trade secrets depends upon the broad principle of equity, that he who has received information in confidence shall not take unfair advantage of it. This sometimes applies even without any reference to the fact that obligation of confidence was imposed; however, I would strongly recommend that one not rely upon that any more than necessary. A computer program certainly has the potential of being a trade secret, provided that reasonable efforts are taken to keep it secret. The warning statement which appears on the software program on my home microcomputer which I have reads to this effect:

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The software has been provided pursuant to a license agreement containing restrictions on its use. The software contains valuable trade secrets and proprietary information and is protected by federal copyright law. It may not be copied, or distributed in any form or medium, or disclosed to third parties, or used in any manner not provided for in said license agreement, except with prior written authorization from the owner.

You will note that there is reference to both trade secret and copyright.

Novelty is required for trade secrets but not the absolute novelty required for patentability of an invention. A trade secret is simply something that's not generally known and about which there are certain strictures of confidentiality. One must balance conflicting interests from the public policy point of view with respect to trade secrets. On the one hand, there is the desirability of research and development by a company to improve its productivity, and this research and development may incorporate know-how which can only be protected as a trade secret. On the other hand, there is the desirability of allowing and even encouraging people who acquire trade skills to carry these skills from one job site to another without unnecessary restraint of trade. So a trade secret, therefore, must be something which is not purely general in nature and which is treated as a secret by the owner.

Trade secrets are private rights which must be enforced by their owners in an action similar to the private action for patent infringement. The types of protection are (1) damages or an accounting of profits for unlawful acquisition or disclosure of a trade secret and (2) injunctive relief. Usually in trade secret actions, the hearing before the court is held in camera (in private) so as to avoid further dissemination of the trade secret during the court process.

Perhaps the most important point to discuss is the requirement for maintaining software as a trade secret. There is almost a contradiction in the way one has to approach trade secrets. In order to take advantage of computer programs either by licensing them or using them internally, you must disclose them (except in the case of a sole proprietor operating as his own employee). They must be disclosed to employees, to customers to a certain extent, to consumers, purchasers, licensees, and, of course, the end users. But the mere fact that a computer program is disclosed to these categories of people does not deprive it of the quality of a trade secret, provided that the owner tries to keep it secret as much as possible.

With respect to employees, the owner can take the following steps. He should advise the employees of the existence of the trade secret and of the importance and obligation of nondisclosure. He should, as much as possible, require nondisclosure agreements to be signed. He should mark all documentation as trade secrets or as confidential. It is good practice and often advantageous for an employer to require or to request an employee to enter into a noncompetition covenant, which should be done at the time of first engagement of the employee,

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prohibiting the latter from engaging in similar work with a competitor in a related field for a limited period of time. The restrictions must be no more than necessary and reasonable to protect the employer both as to geographical limitations and as to the time period. Many people have found to their sorrow, that, at least in Canada, when the limitations are too restrictive, the whole noncompetition covenant will be struck down. If you have a noncompetition covenant for five years on all of North America, that's considered too restrictive, and you will find that there's no noncompetition covenant at all which protects the former employer. The employee might be working for a competitor next door one month after he's left your employment, and there's nothing you can do about it. Therefore, one has to err on the side of caution.

Now with respect to licensees and purchasers, presuming the trade secret owner enters into a written contract, the contract should contain a nondisclosure clause to be respected by the purchaser or licensee. But in the case of necessary disclosure of the program to purchasers who are end users, a formal contract is not conveniently entered into in many cases. A good thing for the trade secret owner to do in this case is to make sure that there is evidence, on the outside of whatever packaging is given to the purchaser, statements that the material is confidential and not to be copied.

There is a penalty under the Canadian criminal code for theft of trade secrets. Our firm has been involved with recommending the laying of charges by our clients with respect to theft of trade secrets. However, the burden of proof is much heavier in criminal matters than in civil matters. There must be proof beyond reasonable doubt in criminal cases, so laying of charges is actually seldom done. There are, of course, civil remedies the same as for patent infringement or copyright infringement. It is prudent for any employer when engaging a new employee, especially when it is known that he has been employed by a competitor, to inquire if that employee signed any noncompetition covenant or any nondisclosure covenant with the former employer. If so, the new employer should act accordingly and should also advise the new employee that he should not disclose any trade secrets which he might possess (which he might otherwise be tempted to do to please his new employer). This will at least show good faith on the part of the new employer, and should there be problems later, the employer will at least be able to show that it is not responsible and hasn't taken advantage of the situation knowingly, in which case it will be protected.

As for choosing the protection of a patent or the protection of maintaining the information as a trade secret, this is a matter which has to be judged on the facts of the case. Patents and trade secrets are mutually exclusive. "Patent" is the shortened form of "letters patent" which was originally a document emanating from the monarch which was made patent or open to everyone who would read it, and showing that which was given in exclusivity, a monopoly to the owner of the patent. This document defined those things which others could not do, and also showed others what they could do outside the bounds of the monopoly. A trade secret by definition is secret or as secret as possible.

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Simply stated, when you get a patent you have to defend it from the point of view of novelty and exercise of inventive genius. It must have been an invention; it must have been new; there must have been no prior publications; there must have been no prior public use or sale in Canada in our case, in the U.S. in your case. Any one of these attacks on the patent will defeat it, so you have to plan very carefully. I agree that a patent is the best protection, but it is sometimes a hard protection to get and to maintain. Sometimes it can be a little easier in the initial stages to maintain the protection of a trade secret, depending upon the energy with which your competition tries to find out your trade secret. However, that's all a matter of the facts in each case. An application for a patent is costly, but once you get a patent (if you succeed in getting it and if you can maintain it), you don't have to worry about whether or not the defendant copied it, because that's irrelevant, and you don't have to worry about whether you kept it secret or not. All you have to worry about is whether the defendant infringed it.

As far as computer programs are concerned, there's the additional question of whether or not the computer program can be patentable in the first place. Computer programs are patentable in Canada, provided you meet the test of our jurisprudence, which means that the computer program must have something other than merely doing by computer what man can do by use of mathematical theorems and scientific principles.

As far as ownership of copyright is concerned, I should stress the difference between Canadian and U.S. law in Canada, because I think that the copyright is a useful way to protect some computer programs. For the copyright to be assigned from one entity to another, the assignment must be in writing. There is a distinction made in our statutes and confirmed by our courts between contracts of employment and contracts for employment. An employee who develops something which is copyrightable in the performance of his functions finds that the copyright in that case is owned by his employer. But if one should engage an architect to prepare a set of plans, an advertising agency to prepare getups for packaging some product, or an independent contractor to prepare a computer program for you, in all those cases (barring some special agreement to the contrary), the ownership of the copyright and the work to be created belongs to the independent contractor. Unless you foresee it and make sure that there is a prior understanding in writing to the effect that ownership of the copyright and the work to be created will belong to the person who commissioned it and paid for it, you'll find that the copyright belongs to the person or the company that created it. That person will be able to sell it to his profit to your competitors, and there's nothing you can do about it.

Another distinction between Canada and the U.S. is that in Canada, copyrights exist without any registration or marking. In the U.S., I believe there are certain requirements that must be fulfilled. However, for the work created in Canada to be protected in the U.S., it is necessary that the copyright legend required by the Universal Copyright Convention (the c in the circle followed by the name of the copyright owner and the year of first publication) be printed on all the copies of the work going to the U.S. But an American or a natural of

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any other country can obtain protection in Canada simply by creating the program. However, it would be advisable for anyone wishing to have a copyright to put the legend on all copies.

There have been objections raised in Canada to the copyrightability of computer programs on the grounds that they are not literary works. They are not human-readable. They are in code form, and when in chip form, they are attached to and form part of a machine. There has been jurisprudence in Canada to the effect that software programs are protected by copyright in Canada. However, in all of the decisions that I have read, while not indicating it as a requirement, the judges seem to take comfort from the fact that, in every case, the program was expressed in writing. So they therefore are saying that, whether or not we need to have a literary work to be the basis of a copyrightable work, in each case there was a work in written form, namely the technical manual used. Maybe there is in every case.

In Canada the term of the protection is the same as in the U.S., the life of the author and six years after his death. The penalties for copyright infringement are more severe in Canada in that we have multiple penalties: damages, plus all the profits made by the infringers, plus ownership of the infringing copies, plus damages for the conversion, plus additional damages for conversion of those copies which were sold. We've found that a good way of proving copyright infringement is to show that the infringer has reproduced mistakes as well as the full text; that happens more often than you might think.

With respect to setting up a licensing program, always be sure that you take care of the term of the license. If you're the licensor, you may not be as happy with the licensee two or three years down the road as you are today, so make sure that there is either a fixed term or the ability to terminate if minimum payments are not met if best efforts are not extended by the licensee; if there should be a change of control or management of the licensee; or in the case of bankruptcy. Sometimes in these cases, you may wish to provide for a sliding scale, but you have to consider whether you want the licensing exclusive or nonexclusive. Consideration should also be given to improvements in the licensed material. The licensee may well make improvements and should be required ahead of time to at least inform the licensor of the improvements, perhaps to give the licensor royalty-free rights to use them, or perhaps to give the licensor the ownership of the improvements. There should be consideration of what happens when the licensee is sued for infringement, what happens by virtue of his use of the licensed material, and whether or not the licensee has the right to sue third parties. According to our recent jurisprudence, even a nonexclusive licensee has the right to sue third parties, but there should be some provision for who will pay the cost and who will share the damages, if any, which are received. Finally, there should be provisions that the license agreement will be terminated if the proprietary rights should terminate, as they would if the patent were declared invalid or the copyright should terminate for some reason.

MR. DONALD M. PEARSALL: What are the real rights about making backup copies of the programs which are covered by patents,

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such as Symphony or Jazz, which are copy protected? According to some people, you can break the copy protection scheme and make copies of the disk for your archives.

MR. MONCO: The owner of the copyrighted material can make as many copies as he sees fit; there's no restriction. The owner can do pretty much what he chooses to do. If someone purchases a license on copyrighted programs, there should be specific terms in the contract between the licensor and the licensee. If the licensor wants to limit the number of copies the licensee can make, then that should be specifically provided for in the contract. You want to have things spelled out in the particular agreement that you have as far as any backup copies are concerned or any material things along this line.

MR. SMITH: If you're in the process of developing a system that you intend to license, at what point in the process where the system slowly takes shape would you apply for a patent to protect the program or the program material?

MR. MONCO: In the U.S., you are obligated to file a patent application within one year after you have reached what's called a reduction to practice in your program. If you at any time offer a particular program for sale, you have to get your application in within one year of that particular offer for sale. It's very limited, and the reason for this is that the government is giving you a monopoly for 17 years; they don't want you to have extended use and marketing rights of this particular piece of software before filing for the patent. That's the reason why trade secret protection and patent protection are mutually exclusive. You cannot maintain a piece of software in secret and use it for five years and then, after it becomes available to a competitor out in the public marketplace, file a patent application. So in the U.S., you have a one-year restriction; you have to get it on file within one year after there has been a reduction to practice of the particular program.

MS. CLARK: The law is a little different in Canada. It's a two-year period, but it's not from the reduction to practice or making of the invention. It's two years from the time it was first publicly used or sold in Canada or two years from the time there was any publication anywhere in the world. Under our law, if someone invents something, even if he uses it in secret, it's only after he first discloses it or it first becomes public that he has this limitation period with which he must comply.