Legal protection for computer programs

Reported by C. J. C. McOustra*

With the support of the President of the International Federation for Information Processing, the British Computer Society invited Mr. C. J. C. McOustra (Deputy Legal Adviser, International Computers and Tabulators Limited) to organize and chair a Law Panel on Legal Protection for Computer Programs at the third IFIP Congress in New York. This is a report of the Panel which took place on 27 May, 1965.

The panel

At the Panel Table on 27 May were the following men who dealt with the subjects indicated:

C. J. C. McOustra
(Chair; and English Law)

Milton R. Wessel
(Partner in the New York law firm of Kaye, Scholer, Fierman, Hays and Handler: trade secrets)

Morton C. Jacobs
(Senior partner, Philadelphia patent law firm of Millman and Jacobs: patents)

John F. Banzhaf III
(Columbia University law researcher: copyright)

Edward C. Gonda
(Philadelphia law firm of Seidel and Gonda: patent and copyright)

Lawrence I. Boonin
(House Counsel, Auerbach Corporation: future developments)

Also present was Dr. A. Bogsch, the Director (Industrial Property) of the United International Bureaux for the Protection of Intellectual Property, Geneva, who commented on the international position. Questions and discussion followed.

C. J. C. McOUSTRA: Introduction

The reasons for the importance and topicality of this subject are plain.

(1) *Programs* are important: U.S. investment in programs is said to have already reached billions of dollars, and it is accelerating fast. Software is becoming more important relative to hardware.
(2) *The Law* is important: The Law has always played an important part in every true advance in civilization anywhere in the world.
(3) *The moment* is important: Reform is in the air. In the U.K. the Patents Act is now under review, including review of the basic definition of a patentable "invention", and a new Law Reform Commission has been set up. In the U.S. a new Copyright Bill is now before Congress.

The U.K., U.S., France, Germany and other countries have recently signed a new international convention for the protection of industrial property. A new European patent convention is in draft.

Finally the advantages of industrial property are beginning to be recognized by the U.S.S.R. and other Soviet countries.

Now is the time to examine how the Law and Information Processing should best move forward together.

The Law is not a static, rigid thing. The Law is in continuous development—in the courts, in the legislatures, in the universities, nationally and internationally. We up here do not sit in our law offices watching progress pass by the window. We are moving too. So let's check that we are all moving in the same direction.

Milton R. WESSEL: Trade secrets

The owner of a trade secret does not really own a property right at all. All he has is the right to prevent others from taking the trade secret from him in an unfair or improper way. Although the legal authorities sometimes confuse the issues, there are two separate and distinct problems involved in any endeavour to protect a development: is the particular item a trade secret? If so, is the method by which the trade secret was obtained fair or unfair? Answering either of these questions almost always involves sensitive and troublesome balancing of interests. Although resolution of any case of alleged trade secret infringement is usually a matter for the exercise of judicial discretion in American courts, with only broad outer limits, there are a number of tests to be applied in considering how to exercise that discretion. I will describe some of the most important of these tests, and then indicate what a company can do to help make clear that its program is entitled to protection under each.

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Tests for protection

The first test: Is the program really secret? It might seem redundant to say that a trade secret must be secret; yet secrecy or the lack of it is frequently one of the key issues in trade secret litigation. The ease with which the data can be obtained from its holder is a valid defence to any trade secret infringement action.

What a company does and says about its program is important evidence in any subsequent dispute as to whether the program is really a secret. Be sure that programs are kept under lock and key, with access limited to those who must see or use them in the business. Boldly stamp all programs and documents relating to them with legends such as "secret", "confidential", "for use by authorized personnel only", "return to office safe", or "not for publication". Insist that all public statements such as speeches and articles be cleared with an appropriate company official before publication.

The particular action to be taken will of course vary with each company and type of operation. The point is to make very clear to everyone that the program is secret and should not be disclosed, and that the company is doing everything within its power to keep it that way.

The second test: Is the program really valuable? With limited exceptions, the greater the value of a program to its owner, and the greater the extent of injury from its use by a competitor, the more likely that the program will receive protection.

The third test: Was the program developed and owned by the company? The job description of any employee who helps to develop a program should include some phase of program design as part of his work, to help make clear that what he does is an important part of his assignment by and for the company.

The fourth test: Was it difficult to develop the program? A key judicial consideration in deciding whether to protect a trade secret is difficulty of development—its cost to the owner. Again, the log should therefore contain as much detail as possible to record the effort devoted to the program.

The fifth test: Was the program copied? Anyone seeking program protection must of course show that at least a substantial part of the alleged infringing program was copied from his trade secret. Proof of similarity is obviously an important link in the chain of evidence establishing trade secret infringement. Indeed, under some circumstances, unexplained similarity may itself be persuasive evidence of copying.

Overall justice

Unless the case is a very clear one—and it usually is not—when the results of all the tests are in, the law will look finally to the essential justice of the situation. Is it fair to the employee to stop him from using any part of the program, if this will result in his loss of an opportunity to work in a part of the industry? Is the developer's claim for program protection so broad and all-pervasive that it in effect gives it a monopoly over a large area of potential competitive activity? The key is to avoid over-reaching, and to do only what is necessary to protect the company's business—of course at the same time always keeping a careful contemporaneous record for later reference.

Every effort should be made to limit the impact of any restrictions on employees, in order to avoid unnecessary interference with their opportunities for other employment in the industry. If the company has several different kinds of programs, try to assign each employee to only one or two areas, so that, if he leaves, he will at least be free to work in the others.

Fairness can be achieved by looking at the company's needs from the viewpoint of employees and competitors, and limiting claims to what can be honestly justified in order to protect the business.

I add, keep a record of what you do.

Conclusion

Trade secrecy protection is of primary importance to the owner of a program having commercial value to others. Many programs are designed for use exclusively in a company's own operations, and are of little interest to outsiders. Adoption of the protective devices I have suggested would be of little purpose for companies holding such programs. Nor is trade secrecy protection of much benefit to those operations of certain large computer manufacturers in which programs are necessarily distributed so widely to customers that confidences cannot be maintained.

For the great body of other program owners, however, including the growing number of service organizations, as well as hardware and software manufacturers, trade secrecy protection can be of great commercial value.

Morton C. JACOBS: Patents

My remarks are confined to the United States, but I believe similar principles apply in various foreign countries.

The United States patent system, in general, offers the most powerful legal tool available for the protection of intellectual property in a new technology. The use of this legal tool of a patent grant is provided for by the United States Constitution as an incentive to inventors to encourage the development of new industry. Patents not only encourage the development of a new technology, but actually serve to foster competition within an industry. It is my opinion that competition in the data processing industries would be encouraged by the patenting of computer programs. The broad legal question of whether computer programs are patentable is one that can be readily understood by programmers and others working in this technology.

Patentable subject matter

In order to appreciate the legal question involved in patenting computer programs we should recall a bit of history. Prior to the American Revolution, the system of patents was that of a king granting monopolies to favoured people. He granted a monopoly on playing

cards, a monopoly on salt, a monopoly on beer, a monopoly on whisky, and so on. The American founding fathers did not wish to have such a system of monopolies granted by the government, but they were interested in encouraging new industry and new manufacturing. On this basis they established in the Constitution the foundation for a patent system "to promote the progress of the useful arts"; "the useful arts" referred to the manufacturing and industrial arts. They provided that inventors may be given for limited times the exclusive rights to their own discoveries in the useful arts. This is an incentive program of giving exclusive rights to the first inventor so that he is encouraged to invest the time, energy and resources to come up with a new product and new industry, and actually put the product and industry into practice. His exclusive right extends only to what he contributes to the development of the art, and not to what already existed.

U.S. Congress by statute, and in accordance with the Constitution, provided that certain classes of subject matter can be the basis for a patent. These classes are (1) manufactures, (2) machines, (3) compositions of matter and (4) processes. Any new and useful improvement in these classes can be the basis of a patent. The class of "process" includes various industrial processes, such as chemical processes, electrical processes and machine processes. Thus, the method of operating a machine is patentable subject matter. In addition a part of a machine or process can be patented as well as the whole machine or process. If an improvement is in a part of a machine or process it provides a basis for patent protection.

Computer programmers and engineers know that computer programs are in fact a method of operating a data processing machine. They also know that a stored program is in fact a part of the machine, and it is the part of the machine which determines or controls the course of operation of the machine itself. A general-purpose computer is not complete until it has a stored program to operate it. Once we recognize that a computer program is a method of operating a machine or is part of the machine, there should be no question that the program is patentable subject matter.

A patent to the logic design of a computer system is clearly patentable subject matter. Logic design and program techniques are but two sides of the same coin; one is the engineering equivalent of the other. Thus since the logic design is patentable, a program should likewise be patentable. For example, since the logic design of indirect addressing is patentable subject matter, the corresponding program technique of address modification should likewise be patentable; since the logic design for index instructions is patentable, the corresponding program technique of a loop routine should also be patentable.

Patent Office position

The Patent Office at the lowest examiner level has taken the position that a computer program is not patentable because it is merely a system of mathematics. If a computer program is merely a system of mathematics, it would of course not be patentable subject matter. Systems of knowledge, business systems, accounting systems, banking systems, scientific principles, all of these areas of human knowledge are not patentable subject matter since the patent system is only intended to cover the manufacturing or industrial arts. An appeal has been taken from the examiner's decision on this patent question, and it is presently pending before the Board of Appeals of the U.S. Patent Office. Ultimately, the question may go to a court for final decision.

Let us consider briefly the question of whether the computer program is merely mathematics. There is no question that mathematics is involved in all of the advanced technical arts, but patents to machines or processes in these arts do not cover the mathematics, they cover the machines or the processes themselves. A great deal of mathematics is involved in noise theory, but a physical system of communication would be covered by a patent and not the theoretical mathematics itself. Likewise, mathematics underlies circuit design and antenna design; yet, circuits and antennas are patented but not the mathematics. You cannot patent a chemical equation, but you can patent a chemical process based on the equation, and of course the closest example we can consider is that of the logic design of a computer itself which is clearly patentable subject matter as a machine. A patent to the logic design of a computing machine does not cover underlying mathematics; it merely provides a monopoly to the machine itself for a limited time. In the same way, a patent to a corresponding program would not cover the mathematics used to develop it; it would merely cover the operation of a machine in accordance with the program.

Patents to programs would not restrict intellectual activities of human beings—the patents would only cover the operation of the machinery. A patent to an accounting program would not cover the accounting system; it would cover the method of operating the machine. A patent to a banking program would not cover the accounting or banking procedure that was used, but would merely cover the particular program of operation of the computer. No one would be prevented from using any particular accounting system or any particular banking system by patents to the programs themselves.

Novelty and unobviousness

In addition to the requirements of patentable subject matter which we have discussed, there is the additional requirement that the invention must be new and unobvious to those skilled in the art. Thus, novelty is not alone sufficient to obtain a patent for a program; it also must be that type of creation which the skilled programmer, the ordinary technician in the art, would not have come up with if given the problem to solve.

There is presently much discussion within the computer industry of fostering competition. I strongly

expect that the entire field of computer programs will be one way of stimulating this competition. A computer program or programs may provide the bedrock on which a new industry is established for providing data services, or such programs may become the product of a company for sale to all of the various users of the programs. It is also interesting that the major cost of the product lies in the engineering and research that goes into developing the program; the manufacturing costs of the product itself are relatively slight and require no substantial investment in plant or equipment. Where new programs are developed, patent protection of these programs may afford security for the company and for its investor against competition, and may permit it to enter successfully into competition with others in the industry. This thought is not a novel one and has been recognized in many other facets of American industry. It was summarized by Jerome Frank, a Justice of the United States Court of Appeals here in New York in an Opinion in a patent case, in which he compared David with Goliath. He said the following: "And so patent monopolies may still be socially useful. They may indeed, as I have said, foster competition. The David Company vs. Goliath, Inc. kind of competition is dependent on investment in David Company, the small new competitor. Few men will invest in such a competitor unless they think it has a potential patent monopoly as a slingshot."

The data processing industries must overcome the tendency to yield to the shibboleth that computer programs are not patentable. They must understand that program developments can be as basic as hardware developments, and may be in the vanguard of computer progress. As that understanding develops, more companies will undoubtedly seek patent protection.

John F. BANZHAF III: Copyright

In April, 1964, the United States Copyright Office reversed its previous policy and announced for the first time its position that computer programs are copyrightable. This event was reported in over a score of business, legal and technical publications. Since that time, legal protection for programs has also been the subject of over a dozen articles and several meetings.

The decision of the Copyright Office, which dealt only with the issue of copyrightability, may still be overturned by the courts or modified by Congress. Thus the best that I or anyone else can do is to state what the law appears to be, at this time, and to advise you to see your lawyer before reaching any important decisions in this area.

How may a program be copyrighted

In the first place, it is important to understand that there are actually two types of copyright protection. One, the so-called *statutory copyright*, is granted under an act of Congress. To obtain it you must satisfy several steps required by the statute. The other form of copyright is a so-called *common law copyright*. This right is independent of any act of Congress and may be obtained simply by writing a copyrightable work. To be copyrightable a work must be original—that is, not be a copy of something else—and must be the product of at least a small amount of creative thought and effort. From the moment such a program is written, its owner has a common law copyright which gives him a fair measure of protection against unauthorized copying or use.

To obtain a statutory copyright, several more steps are necessary. The first is to add a copyright notice in the form of "Copyright 1965 Digidatatronics Corp." This notice simply serves to warn readers that you intend to claim your copyright. The next and final step is to publish the program. By publish, the copyright law means that you must sell copies of it, or place them on sale, or offer them for sale, or publicly distribute them. The moment that the program is published with the proper notice, the program is full and completely copyrighted. It has its full statutory copyright and no further steps are necessary. Moreover, if for some reason the attempted publication was not complete and did not meet the statutory requirements, you nevertheless retain the common law copyright.

The Copyright Office

The Copyright Office does not grant any rights. Once you have obtained your copyright by publication you may record it by registering it with the Copyright Office. The registration is useful if not necessary for proving ownership, for transfering rights in the copyrighted program, and for bringing suit. To register the program, you fill out a simple form, add four dollars, some copies of the program, and mail it all to the Copyright Office.

The protections

Once a statutory copyright has been secured, the law affords the programs certain important protections. Let's see what they are. The program is clearly protected against an outright copying or a copying even with minor or small alterations. It is protected against copying with major changes to the extent that the copier may borrow some of the ideas but not the means of expression. Presumably, the greater the intellectual effort that went into creating the program, the greater will be the scope of protection against copying. The program is also protected into a translation into other computer languages, and is probably protected against duplication in other data processing formats such as punched cards and magnetic tape. However, the copyrighted program is not protected against copying of the principal ideas or against the creation of a similar work by someone working independently who does not copy from the original. These two limitations insure that copyright protection will not be used to stifle the development of programming or to allow the changing of monopoly prices. Under copyright, the program is protected for 28 years and, if it is not obsolete by that time, the copyright may be renewed for another 28 years.

Can one company monopolize all important programs?

I think the answer is clearly no. Unlike a patent, a copyright does not protect against a subsequent original creation. Thus, if a copyright owner did not license his programs for a reasonable fee, someone else would be perfectly free to come along and write a program to do the same task. This, I think, protects the data processing community from any potential program monopolists.

The question which I suspect is of greatest importance is whether copyright protection for programs will prove to be a blessing or a curse for the computer industry. It has been suggested that any form of legal protection is unnecessary, and that it will only serve to hinder the free flow of programs which exists today. I respectfully suggest that this position is incorrect.

The purpose of the copyright law is to promote the creation and interchange of informational and creative works. To a large extent, it has achieved this purpose. Giant industries dedicated to creating and distributing such works exist, and they depend on the protection of the copyright law. Where these purposes have not been promoted by the law—where the law has in effect been misused—the courts and Congress have generally been able to change the law to correct the abuses.

The benefits

Copyright protection for the first time will make possible the wide-scale distribution of programs on a profit basis. Without the protection, the distribution of programs must be limited to prevent copying which would destroy the commercial value of the program to its creator. With copyright protection, the distributor enjoys a legal protection against an unfair use of his intellectual efforts.

I see the primary impact as being on the commercial programming organizations—including the service bureaux. They, after all, are in the business of writing programs for profit. Copyright protection can allow them to distribute their programs to many users rather than simply to a few large ones. Programs previously hoarded may be copyrighted and then released in return for reasonable leasing fees. For the first time service bureaux will be able to write programs aimed at many small users rather than waiting for one large customer to request a particular program.

Large computer users may also be induced to release programs which previously had been secret. Many computer users may also be able to create programs beyond their immediate needs and budgets, secure in the knowledge that part of the cost can be passed along to other users.

To turn very briefly to another matter, there is now a bill before Congress to revise the entire copyright law. Among other things, it would affirm the decision of the Copyright Office and provide substantial protection for computer programs. On the other hand, it would also prohibit the use of any copyrighted material in an electronic data-retrieval system without the prior consent of the copyright holder. I plan to argue soon before a congressional subcommittee that the latter restriction is unnecessary to protect the copyright holder, and that it would unduly burden information-retrieval efforts. Is that the consensus of the data processing community? I would like to know, and I think that the other members of the audience would also like to know.

Edward C. GONDA: Patents and copyright

Where trade secret protection is suitable, it is excellent, but in recent years there have been many decisions by the courts that where there is no trade secret, the only forms of protection available are copyright and patent. I will compare briefly the copyright with the patent. My first advice is that you should consult your attorney as to which form of protection is best.

Combined protection

It is desirable to use combinations of protections where possible. For example, copyright can be coupled with contractual obligations. Moreover, where the subject matter permits a patent application may also be filed. In addition, the subject may be treated as a trade secret while a patent is pending or until publication is made for purposes of copyright.

The cost of obtaining a copyright is minimal. You need nothing more than a copyright notice on the object tape. However, it is best to also make a book out of the program (other than the object tape or deck) and put a cover sheet with title, number, and copyright notice on it. I advise my clients not to bother seeking a copyright registration certificate until it is needed.

Costs and remedies

A patent in contrast costs hundreds of dollars versus less than a hundred. Moreover, a copyright can be obtained much more quickly. In addition, under the copyright statutes, there is a right to have the Federal Marshal seize and impound all of the infringed goods. [Here Mr. Gonda electrified the audience by suddenly making a quick draw from the hip: he then enacted a descent by the U.S. Marshal, revolver in hand, upon the premises of an amazed copyright infringer.]

On the other hand, it is virtually impossible to get a preliminary injunction for patent infringement. Furthermore, for copyright violation it is possible to recover attorney's fees. This is possible only in exceptional cases with patents.

However, the scope of patent protection is much broader than that for copyrights. A patent will protect against others making, using, and selling the patented invention. A copyright primarily prevents others from copying and selling. Moreover, a patent protects the concept involved, but a copyright does not. A copyright only protects the manifestation of the concept.

Thus, there are a variety of forms of protection, each with its advantages, and, where possible, these protections should be used in combination.

Lawrence I. BOONIN: Future developments

In reviewing our discussions so far this morning on the legal aspects of software, we should consider the general context in which these legal aspects exist. You have heard, so far, from specialists in various legal subject matters, and I will try to give you a general corporate practitioner's point of view.

Current developments

That legal problems are caused by software is an indication of software's growing importance. We are now seeing the maturation of hardware design, or at least a slowing of its rate of change. At the same time, new applications for general-purpose hardware are proliferating, and these applications are largely effected by new software. In addition to these varying growth situations of hardware and software themselves, is the recent growth of independent positions in software by companies, usually small, but at any rate divorced of a vested interest in a particular line of hardware.

These software-oriented companies have a more urgent need to consider rights in software as a separate and distinct field than did the hardware-oriented firm of several years ago. In addition to those who acquire software positions for resale are those who have developed software for their own use, which conceivably can give a competitive advantage if it can be protected from use by others.

The law and intangibles

In this new climate, we may find that a number of new legal concepts will have to be considered. Software is or may be viewed as a new kind of property, as, in effect, "intangible machinery". I have seen, and many of you have also, technical proposals that offer to "manufacture" a compiler. One not familiar with the language of the industry would not know that the proposed product was an intangible, but would expect the end item to be a machine on the floor of a manufacturing plant. This intangible machinery will amplify the intellect and thus provide the mechanism for the information revolution that has been so much discussed this week; even as tangible machinery amplified muscle power for the industrial revolution. As this new intangible becomes more important and pervasive we should not assume that the legal attributes and consequences of tangible machinery can be blindly applied to this new field. We have had this experience many times in the law. For example, several hundred years ago the idea of intangible wealth was a new and strange one; the rules for the transfer of tangible wealth did not, as it turned out, meet the needs and problems generated by such increasingly used intangibles as bills of exchange, promissory notes, or even paper currency. The growth of software faces us with a situation that contains, at least, the innovative potential that the assignability of intangible wealth had two or three hundred years ago.

There are several other legal consequences that may develop from this new area of intangible property. One already has begun to be evident. Data, as used in the commercial or industrial sense, generally means ancillary data, data in connection with something else, for example, an instruction manual, a production drawing, or a process flow chart. Only a limited set of intangibles have been both data and end-products. However, with the burgeoning growth of software, data as an end-in-itself may outstrip tangible machinery in value. While this may not require a major accommodation from the general body of law, it certainly will indicate a need for modification of the approach presently taken by the Department of Defense and other major buyers of software, since they are treating software as the equivalent of blueprints, while software certainly can be something more than that.

The role of the law and of lawyers

Those of you schooled in other disciplines than the law should not view lawyers as interlopers in considering these problems. Just as engineers work daily at trade-offs between the forces of nature, so a lawyer's job is to effect or at least record trade-offs between social forces. Depending on the lawyers and on the times in which they find themselves, the resulting trade-off can be for good or ill; but such trade-offs are necessary and will be made. They should be made on mature consideration and based on the best data available.

From the practical lawyer's point of view, and based on considerable involvement with industry, I should also note an additional problem that is part and parcel of applying these traditional legal concepts of intellectual property to software. Many engineers feel that the parameters of software are so varied that it is always possible to achieve a desired result, despite the pre-emption of a specific line of attack via copyright, patent or what-have-you. Perhaps a corollary of the same proposition is the feeling of many engineers that the past fifteen years have created such a fund of "prior art" in the public domain that there can be no significant new software inventions. This latter point of view is a dangerous one to hold, and one that has often been disproved in the course of technical progress.

Further areas

The general context which I first described has impact in areas of law (other than patents and copyright) that are of interest both to the practitioner and to the businessman. New forms of *contracts* will have to be drafted to protect rights in software, to gain access to rights in software, and to determine the rights of those whose data is processed by the software. The law of *agency* may be modified by the intrusion of a quasi-personality in the form of software. The law of *property* may take on new dimensions; to what extent can those who have bits of data about me, each one in itself not particularly

informative or damning, combine these elements of data and broadcast the result to the world at large?

A Pandora's box has yet to be opened in the area of software *crimes*. That software will become an element in crimes, I think we can assume. The problem may only lie in detection—once perceived, these crimes can be handled quite adequately by the present law, but there is no telling what may happen tomorrow.

In addition to all of the standard categories of the law, we may, to meet special situations, develop as yet unknown rights and responsibilities. For example, there is presently no general obligation to save, retrieve, and produce data on demand. Conceivably, with software retrieval systems in ample supply, such a duty may be imposed by the law. There is a glimmering of this presently in recent Government contracts under which a supplier does not currently supply all conceivable data as part of a contract, but is only required to set up a data management system that will produce such data as is necessary on demand. This may be an inkling of the future.

Cross-talk

Certainly there must be continued cross-talk between lawyers and those working directly in the field of software.

Lawyers can, today, make certain specific practical contributions to this cross-talk. You should certainly examine your software with a view toward protecting it if such protections seem useful. If a particular format is valuable, copyright protection would be indicated. An attempt to get patent protection, while likely to be successful would, at present, prove a long and expensive affair. Your contracts can be made sensitive to the problems of software, whether you are providing or receiving it, whether you are manufacturing or using it.

We are, all of us, lawyer, engineer, or scientist, at the beginning of what appears to be a new age. It is as though the steam engine, the spinning jenny, the cotton gin came into being only a few years ago and we are trying to predict their socio-economic consequences. When the lawyers of the early 19th century worried about the industrial revolution, their immediate problems were such as the allocation of the loss caused when sparks from an engine's smoke stack set hay stacks afire. They could not tell of the much larger problems of the industrial revolution (automobile accidents, monopolies, rights of labour, government regulations) that face us today. We must recognize that we are at the beginning in this field of software, and not assume that our solution to the "burning hay stack" problem will solve all problems for all time.

C. J. C. McOUSTRA: English law, and a summing-up

The position in English Law is very similar to that in the United States. The chief heads of protection are as follows.

Possession and ownership

This speaks for itself, and is a primary and fundamental protection. It is always open to the owner of a program to retain complete possession in every way: he can keep all written or printed representations of the program and the tapes and cards in safe custody, and disclose them to no one outside the company; and he can lock in part of the program which has to remain in the computer, in such a way as to make it difficult, or even impossible, for anyone to extract it.

Contract

This is also a fundamental protection: if the owner of a program does wish to part with it he can require certain conditions by agreement with the purchaser covering, for instance, the price or rental or royalty, the use to which the program may be put, and the obligations on the purchaser not to disclose the program to anyone else. And contracts can be used not only with customers, but in the case of the program owner's own employees.

There are two weaknesses. Firstly the observance of contractual undertakings is sometimes difficult to police. Secondly, a contract cannot bind a third party who did not sign it. Thus the program supplier cannot enforce the secrecy undertaking against a third party who obtained the program from the purchaser even though he obtained it in breach of the purchaser's contractual undertaking (*cf.* Trade Secrets below).

Patents

The law in the United Kingdom (including the definition of "invention" in the Patents Act) is now under review with the position of programs as a point under consideration. The position of programs under the present law is not completely clear; but a true software invention has all the attributes of an invention as traditionally accepted by the Patent Office and for this, and several other reasons, it should be made clear in the revised Act that it is patentable. Patentable inventions in software are rare, however. In most cases it is effort, know-how, experience and time and money which are at stake and which need protecting.

Copyright

In the United Kingdom this is automatic. There is no registration as in the U.S.A.

Its weaknesses are that it applies to legible works only; that it is not clear what constitutes "reproduction" of a copyrighted item for the purpose of the law; and that copyright protects the legible expression only and not the invention technique or know-how contained in it.

Trade secrets

The United Kingdom is very close to the United States here, and I would adopt nearly everything that Mr. Wessel has said. Note that, unlike contract pro-

tection, trade-secret law can enable the program owner to stop the use of a secret program by a third party.

Gap

The above branches of the law, particularly when used in combination, provide a substantial measure of protection for use in appropriate cases. There is a gap, however. Assume an advanced program with important new methods and techniques in it; a great investment in man hours; but no patentable invention in it; and assume that the developer wants to distribute it widely—so there is no trade-secret protection. This leaves only contract and copyright which on their own are inadequate.

There is need for further development of a general law of unfair competition designed to protect expensive developments from theft whether or not they have been kept secret. Indeed, secrecy requirements militate against wide dissemination of new techniques and slow down progress. The developer of an important new technique should be able to distribute it widely to those willing to pay a fair price, without losing his power to prevent others pinching it for nothing.

The philosophy

You have heard of some of the different protections. What is the idea behind them?

Simply the idea of property or ownership, and private rights; the idea that someone who creates or buys something should be able to gain reward for his enterprise or investment by trading in it for profit, and that he should be able to stop those who won't pay.

Please notice that the Law does not stop there. I refer to the branch of the Law that outlaws *abuse* of property and private rights, the Law that is called Anti-Trust or Restrictive Practices Law or Competition Law. This is the branch of the Law that controls monopolies; refusals to do business on reasonable terms; tie-ups between companies, abuses by predominant companies etc.—the branch of the Law that seeks to secure FREE AND FAIR COMPETITION. Take those two concepts together:

—property and private rights
—used in free and fair competition

and you have a combination which has helped to give us the most successful industrial nation yet seen, namely the U.S.A. That is a powerful recommendation for the existing legal concepts.

The software situation

Is there anything in the modern computer program situation which invalidates those two concepts?

I see three new factors:

(1) The speed of software development: much faster than the hardware revolution a hundred years ago.
(2) Closer links between the industry and the universities: the gulf between industrial development and university research is disappearing.
(3) The Law has never sought to enable people to own or protect ideas: the Law has always sought to enable people to own and protect property. Where is the dividing line in software?

If anyone sees any further new factors let's have them.

Tentative conclusions

(1) Some of the legal procedures may need speeding up e.g. in patents.
(2) Gaps in the existing protections need remedying.
(3) The basic twin concepts of
—property and private rights
—in free and fair competition under Law
are sound.

The Session is now open to discussion.

DR. A. BOGSCH: International viewpoint

My organization is an inter-government agency descended from UNESCO. Its members are all the highly industrialized nations and some of the less developed ones. We deal with laws affecting industrial property and we function at the level of co-operation between governments. Our aim is to protect the rights of citizens in foreign countries.

Computer programs are a new field falling within our activity. There is a certain interaction between international law development which follows behind the development of national law. However, many countries hear about developments first in the international forum. What is developed here in the United States will have a direct effect on the law of many other countries. I hope that more material will ensue on the subjects discussed here today.

Floor discussion

There were a number of questions from the floor: the principal points from the discussion are summarized as follows:

Algorithms have the concept of programming techniques, as far as patent protection is concerned, but the copyright position is not clear. Congress is considering legislation on copyright.

Patented objects and processes: to be patented an invention must be a real advance in the art as known to experts, and at present there is a difficulty in that the Patent Office examiners are unable to make a search to prove that a patent is novel.

International Vocabulary (IFIP) defines a *program* as "a general term for a specification of a process to be performed on data".

There is now a frontier between industrial property on the one hand and *scientific ideas*, which the law has never sought to protect, on the other. Where is the dividing line? It is doubtful whether the mathematical analysis which precedes the writing of a program could be copyrighted; it is certainly not patentable. The computer industry will probably hurt itself if it pushes for a legal structure which might restrict the free exchange of ideas.