

COMPUTERS AND THE LAW: THE PROTECTION OF INTELLECTUAL PROPERTY

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With the development and widespread use of computer technology difficult questions relating to the legal protection which may be given to computer "software" must be considered. In this article Mr Lahore examines the existing law relating to intellectual property and discusses whether the Patents Act 1952 (Cth) and the Copyright Act 1968 (Cth), as they have been and may be interpreted and applied, provide suitable and adequate protection for this computer software.

Introduction

The impact of computer technology on the law of intellectual property has raised legal problems which have proved difficult if not impossible to answer within the framework of existing legal concepts. Intellectual property is relevant to the development of computer technology in two broad areas: legal protection for the work of the programmer and infringement of intellectual property rights by the use of computers. It is impossible to avoid giving only a broad survey of these areas in a paper of this nature but an attempt will be made to indicate present developments and proposals for reform. It is particularly appropriate to consider the protection of intellectual property at this time as important and interesting studies of the issues have recently become available or will soon be taking place. I refer to the Report of the Committee to consider the Law on Copyright and Designs (the Whitford Committee Report) which was presented to Parliament in the United Kingdom in March 1977,¹ and to the Fourth Session of the Advisory Group of Non-Governmental Experts on the Protection of Computer Programmes which was held in Geneva in June 1977 at the World Intellectual Property Organization.² As the Report of the Whitford Committee and the deliberations of the Advisory Group see the solution to the problems of the protection of intellectual property as lying within the field of copyright law rather than within that part of the law of intellectual property which is concerned with the grant of patents for inventions, it is to the problems of copyright that this paper will be largely directed. Another important development in the

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¹ Report of the Committee to consider the Law on Copyright and Designs: Copyright and Designs Law Cmnd 6732. The Chairman of the Committee was The Honourable Mr Justice Whitford.

² The session was held from June 1 to 3. The conference documents are included in the series AGCP/NGO/IV.

direction of a "copyright solution" is the American Copyright Revision Act which came into operation on 1 January 1978.³

It is necessary, by way of introduction, to clarify the meaning of the concept of intellectual property and to indicate briefly how it is that the concept has relevance for the computer software industry and the programmer generally. It may be said at the outset that the law, in attempting to deal with new computer technology, has been juggling with concepts which had their origins in an earlier age and which were developed for purposes which did not require solutions to the problems now posed by computer technology. In general, the concepts do not "fit" the form of the technology. The law of intellectual property⁴ is defined by the Convention establishing the World Intellectual Property Organization as including the rights relating to:

- literary, artistic and scientific works,
- performances of performing artists, phonograms, and broadcasts,
- inventions in all fields of human endeavour,
- scientific discoveries,
- industrial designs,
- trademarks, service marks, and commercial names and designations,
- protection against unfair competition,

and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.⁵

Protection of the above work is dealt with under national laws by the laws relating to copyright, industrial designs, patents for inventions and trade marks, and the laws preventing unfair competition and disclosure in breach of confidence. If one were to seek a general conceptual framework within which to include these various laws it would probably be the protection of the results of intellectual activity in the form of inventive ideas, new products and original work from unauthorized use or misappropriation. This is done by giving to the inventor, designer or originator of the material certain exclusive rights of exploitation for limited periods. The object is seen as the advancement of industrial and cultural development and the encouragement of the necessary financial investment. As it is the laws relating to patents for inventions and copyright which directly concern the protection of computer technology, and as it is the possible infringement of copyright which is the principal issue in the use of computers in the

³ Title 17, USC (Public Law 94-553, October 19, 1976).

⁴ This term has not been commonly used in Australia until recently. The previous practice was to use the term Industrial Property. This latter term is now generally used to include rights in inventions, trademarks and designs, but not copyright.

⁵ Convention, Article 2(viii) (Stockholm, 14 July 1967).

context of intellectual property rights, it is to these two areas of law that I wish primarily to direct attention.

For the purposes of the legal discussion which follows I propose to adopt the following definitions:⁶

(i) “computer programme” means a set of instructions capable, when incorporated in a machine-readable medium, of causing a machine having data-processing capabilities to carry out arithmetical and/or logical operations in order to indicate, perform or achieve a particular function, task or result;

(ii) “programme description” means a procedural presentation of a computer programme, in verbal, schematic or other form, in such detail as effectively to determine the set of instructions constituting the computer programme;

(iii) “supporting material” means problem descriptions, operating instructions and similar material that aids in the understanding, completion or application of a computer programme;

(iv) “computer software” means any or several of the items referred to in (i) to (iii).

Two principal problems make the question of legal protection of computer software a difficult one to answer satisfactorily. First, the nature of computer software is such that it does not easily fall within any existing category of intellectual property legislation, in particular, the Copyright Act 1968 (Cth) and the Patents Act 1952 (Cth). The issue is confused by the various physical forms in which computer software may appear. Secondly, it is not at all clear what type of protection the computer programmer wants. If it is protection against unauthorized use of the computer programme or programming method a patent gives the most appropriate (and most extensive) protection, but the work of the programmer and the expression of his work in the various physical forms of computer software (descriptions, flow charts, sets of instructions in different languages, punched cards, tapes, *etcetera*) fall more logically within copyright law. However, the scope of copyright protection is essentially limited to reproduction, public performance and certain types of transmission.⁷

⁶ These definitions are included in s.1 of the draft model provisions for a national law on the protection of computer software prepared by the International Bureau of the World Intellectual Property Organization at the request of the Advisory Group of Non-Governmental Experts on the Protection of Computer Programs at its third session in Geneva in May 1976. The text is included in document AGCP/NGO/IV/2. The draft model provisions were discussed at the fourth session of the Advisory Group held in June, 1977.

⁷ It is not true to say that copyright only protects against copying. The scope of copyright protection is frequently misunderstood. The question is discussed hereafter.

Patents for Inventions

There has been a number of attempts in Australia to obtain patents for computer programmes or methods of programming but the Patent Office has consistently refused to grant patents for computer programmes, methods of programming and records of programmes in the form of punched cards. The current practice is summarized in a decision of the Patent Office in 1974:

I will further assume that a programme means a sequence of instructions to solve a particular problem. Although this appears to limit the field to problem-orientated programmes, it is clear that the nature of the computer to be used will have an effect, and that the programme will have to be expressed and modified to suit the machine. This is quite apart from the fact that the various languages in which the programme is consecutively expressed must also be chosen to suit the type of hardware to be employed. The piece of paper or cardboard or tape or film on which the programme is written, typed, drawn, punched or otherwise recorded will be considered to be a record of the programme and not the programme itself.

A programmer is a person who conceives a programme and expresses it in some form. For the purpose of the present considerations, I am taking programming as referring to the mental and manual processes of originating a programme. Any subsequent routine operations, performed on the programme, such as coding, translating, compiling or loading, may also be included in the general operation of programming; but those actions by themselves, that is without the conception of the programme, do not add up to programming.

On the basis of the above definitions, the practice of the patent office in matters relating to programming of computers may be summarised in the following manner. Computer programmes, consisting of sequences of instructions how a problem may be solved, are not a proper subject for letters patent. Methods of programming, consisting of the writing down, in one form or another, of a programme are also not a proper subject for letters patent. A tangible record of a programme in a physical form may be proper subject-matter for letters patent if it can be differentiated from the prior art by features other than the recorded text of the instructions. And finally, a computer, programmed by a particular programme, may also be proper subject-matter for letters patent if its hardware is different from the prior art or has been effectively modified by the programme.⁸

It is important to emphasize that the above statement refers only to the practice of the Patent Office and that no case has so far come before a court. It is not clear whether or not a valid patent can be obtained for

⁸ *Telefon A/B L.M. Ericsson's Application* [1975] F.S.R. 49, 55; (1974) 44 The Australian Official Journal of Patents, Trade Marks and Designs 846.

computer programmes or methods of programming. It is pertinent, therefore, to consider the reasons for the decisions of the Patent Office and their justification, but first a brief comment is necessary on the concept of invention in Australian law.

There is no definition of "invention" in the Patents Act 1952 (Cth) other than by reference to section 6 of the Statute of Monopolies passed in the reign of James I in 1623.⁹ The general purpose of the Statute was to prohibit the grant of monopolies by the Crown for the exercise of some well-known branch of industry or commerce by an individual or corporation. Section 6 expressly allowed grants for a limited term for "the sole working or making of any manner of new manufactures" within the realm to the true and first inventor, but such monopolies were not to be "contrary to the law nor mischievous to the state, by raising prices of commodities at home, or hurt of trade, or generally inconvenient". It is still the concept of a manner of new manufacture which is the basis of the grant of a patent in Australia today.¹⁰ But the meaning of the concept has been the subject of a large amount of litigation and it is not possible to lay down any clear definition. It is probably not wise to attempt to do so other than in very broad terms as definitions propounded by the courts have in the past tended to develop into inflexible criteria which were applied as if they constituted the provisions of a statute. This was especially true of tests suggested by Morton J. in *G.E.C.'s Application* in 1942.¹¹ The concept of the manner of new manufacture has proved most difficult to apply in relation to a method or a process and Morton J. expressed the view that a method or process was a manner of manufacture if it resulted in the production of some vendible product, improved or restored to its former condition a vendible product or had the effect of preserving from deterioration some vendible product to which it was applied. This test had the unfortunate effect of emphasizing the physical "thing", in the sense of an article or substance to which the invention should in some way be tied.¹² However a new approach to the concept of "manner of new manufacture" is illustrated by the important decision of the High Court in 1959 in *National Research Development Corpor-*

⁹ Patents Act 1952 (Cth) (as amended) s. 6, definition of "invention"; and s. 35(1)(aa), form of application, see *infra* n. 10.

¹⁰ An application for a patent must be "in respect of a manner of new manufacture the subject of letters patent and grant of privilege within s.6 of the Statute of Monopolies": Patents Act 1952, s. 35(1)(aa) (Cth). Australia has been referred to as ". . . the outspoken opponent of patent protection for computer programs . . ." Pagenberg, "Patentability of Computer Programs on the National and International Level" (1974) 5 I.I.C. 11.

¹¹ (1942) 60 R.P.C. 1.

¹² See, e.g., *Bovington's case* (1946) 64 R.P.C. 20; *Standard Oil Development Company's case* (1951) 68 R.P.C. 114; *cf.*, *Cementation case* (1945) 62 R.P.C. 151; *Rantzen's case* (1946) 64 R.P.C. 63; *Elton & Leda Chemicals Ltd's Application* [1957] R.P.C. 267.

ation v. Commissioner of Patents.¹³ The case is regarded as a “watershed” decision not only in Australia but also in New Zealand and in the United Kingdom, and its importance for the purposes of the present discussion justifies quotation at length. The case concerned an application by National Research Development Corporation for a patent for a process for killing weeds in specified leguminous fodder crops by the application of a known substance as a selective herbicide. The application was refused by the Commissioner on the grounds that the claims were not directed to any manner of manufacture as they referred to the mere use of known substances which did not result in any vendible product. An appeal was made to the High Court as the Appeal Tribunal under the Patents Act 1952 (Cth). The High Court (Dixon C.J. and Kitto and Windeyer JJ.), in allowing the appeal, commented on the definition of invention as follows:

The word “manufacture” finds a place in the present Act, not as a word intended to reduce a question of patentability to a question of verbal interpretation, but simply as the general title found in the Statute of Monopolies for the whole category under which all grants of patents which may be made in accordance with the developed principles of patent law are to be subsumed. It is therefore a mistake, and a mistake likely to lead to an incorrect conclusion, to treat the question whether a given process or product is within the definition as if that question could be restated in the form: “Is this a manner (or kind) of manufacture?” It is a mistake which tends to limit one’s thinking by reference to the idea of making tangible goods by hand or by machine, because “manufacture” as a word of everyday speech generally conveys that idea. The right question is: “Is this a proper subject of letters patent according to the principles which have been developed for the application of s. 6 of the Statute of Monopolies?”

The truth is that any attempt to state the ambit of s. 6 of the Statute of Monopolies by precisely defining “manufacture” is bound to fail. The purpose of s. 6, it must be remembered, was to allow the use of the prerogative to encourage national development in a field which already, in 1623, was seen to be excitingly unpredictable. To attempt to place upon the idea the fetters of an exact verbal formula could never have been sound. It would be unsound to the point of folly to attempt to do so now, when science has made such advances that the concrete applications of the notion which were familiar in 1623 can be seen to provide only the more obvious, not to say the more primitive, illustrations of the broad sweep of the concept.

It is, we think, only by understanding the word “product” as covering every end produced, and treating the word “vendible” as pointing only to the requirement of utility in practical affairs, that the language of Morton J.’s “rule” may be accepted as wide

¹³ (1959) 102 C.L.R. 252.

enough to convey the broad idea which the long line of decisions on the subject has shown to be comprehended by the Statute.¹⁴

This extension of the concept of invention has had a dynamic impact on the development of Anglo-Australian patent law. In the United Kingdom the Divisional Court held in *R. v. P.A.T.; ex parte Swift & Co.*¹⁵ that a patent should be granted for a meat tenderizing process, as the Australian and New Zealand decisions had raised a doubt as to whether or not such a process was patentable and the function of the Comptroller and the Tribunal was only to refuse applications which on no reasonable view could be said to be within the ambit of the Patents Act. Since that decision patents have been granted by the Patent Office in the United Kingdom for computer software. The Australian Patent Office has not followed this development for the reasons discussed hereafter. In considering the approach of the Patent Office in this country two important factors must be kept in mind. First, as previously indicated, the decisions of the Patent Offices in the United Kingdom and in Australia on the patentability or otherwise of computer software have never been tested in the courts so that the question is not settled. Secondly, it is not only a question of what is a "manner of new manufacture" within section 6 of the Statute of Monopolies that must be determined. It is sometimes forgotten that section 6 of that Statute also requires that patent grants shall not be "contrary to the law, nor mischievous to the state, by raising prices of commodities at home, or hurt of trade, or generally inconvenient". The question of public policy must therefore be considered: what is the purpose for the grant of patents? This question has been clearly raised by the Australian Patent Office in rejecting programming claims.

Computer programming is a relatively young art and, although many stratagems and simplifications have been devised so far, a much greater number may be expected to be devised in the future. It would certainly be mischievous to the State and generally inconvenient if, after investing a million dollars in a computer, the owner were to find himself prevented from operating it efficiently, or in any other manner he may wish, or with any degree of privacy or secrecy he may desire.

That statement was made in 1968 by the Supervising Examiner in *The British Petroleum Co. Ltd's Application*¹⁶ and it may no longer be relevant in terms of the development of the computer industry, but the public policy approach is interesting.¹⁷ If one of the functions of the patent system is seen as the encouragement of the development of

¹⁴ *Id.* 269, 271, 276.

¹⁵ [1962] R.P.C. 37.

¹⁶ (1968) 38 *The Australian Official Journal of Patents, Trade Marks and Designs* 1020, 1021.

¹⁷ The policy is again stated in 1974 in *Telefon's case*, *supra* n. 8.

national industry and technology by rewarding inventive ideas and establishing a basis for the investment of risk capital so that they can be adequately exploited, then it seems strange to reject patent protection for the computer software industry on the ground of public policy while allowing it for computer hardware.

The Banks Committee in its Report on the British Patent System (1970) has emphasized that the definition of what is patentable must be kept flexible in order to keep pace with scientific and technical developments, and the Committee noted that doubts had been expressed as to the adequacy of the existing definition in the Statute of Monopolies.¹⁸ The Committee concluded that the decisions of the courts had shown that the concept of patentability had changed with changing technology and referred in particular to the decision of the High Court referred to above. The Committee recommended that the old definition should be retained with the addition of a list of inclusions and exclusions for the avoidance of doubt.¹⁹ The Committee also recommended that a computer programme, that is, a set of instructions for controlling the sequence of operations of a data processing system, in whatever form the invention was presented, should not be patentable.²⁰ The exclusion would include a method of programming computers, a computer when programmed in a certain way and cases where the novelty or alleged novelty lay only in the programme.

The international trend is away from a patent solution for the protection of computer software and a modified copyright system now seems to be the preferred solution.²¹ The copyright approach will be discussed later. But, first, a brief examination of two decisions of the Australian Patent Office will illustrate the impasse which has been reached in seeking protection for computer software within the concept of patentability, however flexible that concept may now be considered to be since the *N.R.D.C.* case. The two decisions are those in *The British Petroleum Co. Ltd's Application* (1968)²² and *Telefon A/BL.M. Ericsson's Application* (1974).²³

Some matter has never been considered to constitute a patentable invention. This matter includes a method of calculation or a process of mathematical operations,²⁴ business, commercial and financial

¹⁸ Report of the Committee to examine the Patent System and Patent Law: the British Patent System Cmnd 4407 (1970) para. 225.

¹⁹ *Id.* para. 229.

²⁰ *Id.* para. 487; see now, Patents Act 1977, s. 1(2)(c) (U.K.).

²¹ See, e.g., the Advisory Group of Non-Governmental Experts on the Protection of Computer Programs. Fourth Session (Geneva, June 1 to 3, 1977), *supra* n. 2.

²² (1968) 38 The Australian Official Journal of Patents, Trade Marks and Designs 1020.

²³ (1974) 44 The Australian Official Journal of Patents, Trade Marks and Designs 846.

²⁴ See, e.g., *Texas Instruments Inc.'s Application* (1968) 38 The Australian Official Journal of Patents, Trade Marks and Designs 2846, 2849-2850:

schemes,²⁵ schemes of operation,²⁶ and printed sheets, cards, tickets or the like which are mere records of intelligence.²⁷ The *British Petroleum* case was concerned with two applications, 30,390/63 and 30,391/63, both of which related to a computer programme containing a number of operations called iterations. The discovery upon which the invention was based was that in the computation of a solution matrix a new iteration could be initiated before the previous iteration was completed. The programme could be used with any digital computer and it could be represented on any medium (for example, punched cards or tape) that could be read by the input device of the computer. The invention was not a computer. It was not a programming medium. It was, in fact, a new way of solving mathematical problems. But a new way of solving mathematical problems is not patentable subject matter. Alternatively, the programme was in the nature of a scheme how to use a computer and such a scheme is not patentable subject matter. The practice of the Patent Office was to refuse applications for patents where the invention consisted merely of a programme or working directions for a known computer.

The applicant had appreciated the difficulty of obtaining a patent for a method of solving a mathematical problem and the claims had been drawn in an attempt to avoid this. The claims of application No. 30,390/63 were directed to programming means such as punched tape, punched cards or magnetic tape which could be used to control a computer to operate in the way stated in the claims. There is no doubt that a card or tape may be a manner of manufacture, but the case for a patent falls because a card or tape is not a new article. To the extent that the monopoly is sought for what is embodied in the card or tape, that is tantamount to a claim for the intellectual content (or the programming method) and that is not patentable. The claims of appli-

A process, to be patentable must belong to a useful art, as distinct from a fine art. "Fine" and "useful" have not been defined, but a process of mathematical operations performed on a set of curves representing mathematical functions appears to me to lie in the realm of fine arts, in the sense that intellectual rather than industrial activity is involved, and that seems to be the case regardless of whether the operations are carried out mentally, or with the aid of a slide rule, or with any other type of computational assistance.

If a new machine had been invented to solve the problem it would have been patentable.

²⁵ *D.A. & K.'s Application* (1925) 43 R.P.C. 154; *Stahl & Larsson's Application* [1965] R.P.C. 596.

²⁶ *N.V. Philips Gloeilampenfabrieken* (1966) 36 The Australian Official Journal of Patents, Trade Marks and Designs 2392.

²⁷ *Fishburn's Application* (1938) 57 R.P.C. 245; *F.'s Application* (1954) 72 R.P.C. 127. Compare *Cobianchi's Application* (1953) 70 R.P.C. 199 where a pack of Canasta cards was held to be a "manner of manufacture" as there was a working interrelationship in the set whereby the aggregation possessed (with the rules of the game) "something more" than the sum of the individual parts. The application was rejected in Australia for lack of novelty.

ation No. 30,391/63 were originally directed to a method of operating data processing apparatus but were amended following acceptance of an alternative claim in the British Patent Office.²⁸ The amended claim was directed to a computer when programmed to operate in accordance with the method referred to previously, in other words, a new computer. The reason for this amendment was to avoid rejection on the basis (taken in the British Patent Office) that the product of such a method of operating a known machine was data or intellectual information and not patentable, even within the wide area of patentability propounded by the High Court in the *N.R.D.C.* case. The basis for this argument was that the word "product", although comprising every end produced, did not include an end product comprising merely intellectual information, and that the method was not "vendible", in the sense of having utility in practical affairs, as the data produced might be of purely academic interest with no practical application.²⁹

The Australian Patent Office accepted the general proposition that a claim to a computer was patentable but the amended claim was rejected. The specification did not disclose a specific and novel computer as the invention could be used "with any old computer" suitable for solving linear programming problems. The claim was also held to be ambiguous in that it was not clear whether a permanent or temporary arrangement of the circuitry was brought about by means of the programme. A similar claim was allowed in the British Patent Office, although the question of novelty was not in issue there.³⁰ The claim to the programming means was also allowed (novelty again was not in issue) on the ground that the punched card or tape was more than a record of a programme; it was an integer which physically co-operated with a computer to control the latter to operate in a certain way, similar to a cam which controlled a machine.

The *British Petroleum* case in Australia, and its British counterpart *Slee and Harris's Applications*,³¹ illustrate the basic problems in the patent approach to protection of computer software. These may be summarized in the following way. A patent cannot be obtained in Australia for a computer programme as a product, that is in the form of a card, tape or machine as it is not novel. A claim for a method or process of programming a computer³² will be rejected because a mathematical solution to a problem is not patentable, and in the

²⁸ *Slee & Harris's Applications* [1966] R.P.C. 194. The decision of the Superintending Examiner in the United Kingdom was concerned with the corresponding basic applications. Patents were issued following that decision.

²⁹ This argument refers to the interpretation given by the High Court to the "vendible product" test of Morton J. in *G.E.C.'s Application* (1942) 60 R.P.C. 1.

³⁰ [1966] R.P.C. 194, 196; [1975] F.S.R. 49, 59.

³¹ [1966] R.P.C. 194, *supra* n. 28.

³² A distinction had been made in the British Patent Office between a claim to "a method of programming a computer" *i.e.* a computer programmed in a particular way (allowable), and a claim to "a method of controlling a computer" (not allowable). The distinction was discussed and rejected in *Burroughs Corporation's*

broader field of programming, as distinct from linear programming, a scheme how to use a computer in an advantageous manner is not patentable. A computer itself is, of course, patentable as a product, but a claim directed to a computer programmed in a certain way will not be allowed unless the computer is physically different from known computers. If the invention can be embodied in known computers without requiring modification of their structure it is not novel.³³ The attitude of the Australian Patent Office was re-stated in *Telefon A/B L.M. Ericsson's Application*.³⁴

The summary of the office practice in that case has been referred to above, but it is interesting to note that, as in *The British Petroleum Co. Ltd's Application*, public policy is given as a reason for rejection of the application: the hardware proprietor should be able to use his machine freely "as he thinks fit". This is, with respect, a curious argument. It hardly seems a satisfactory reason to refuse protection to the work of the programmer that the patentee of the hardware should be free to use whatever software he desires in the operation of that hardware. Such licence, as the applicant properly argued, is not granted to purchasers of other machines. Nevertheless, the public policy argument seems to be the main reason for the rejection of software patents by the Patent Office.

It is arguable that the Australian Patent Office has adopted an unduly rigid approach in its rejection of claims to computer software and that a court might allow appropriate claims on appeal from the decision of the Commissioner.³⁵ Three cases in the Patents Appeal Tribunal in England illustrate alternative approaches to the question of patentability. These cases are *Badger Company Inc.'s Application*,³⁶ *Gevers' Application*³⁷ and *Burroughs Corporation's Application*.³⁸

Application [1973] F.S.R. 439, 447. Both forms of claim were considered indistinguishable and equally objectionable by the Australian Patent Office: *Telefon A/B L.M. Ericsson's Application* (1974) 44 The Australian Official Journal of Patents, Trade Marks and Designs 846; [1975] F.S.R. 49.

³³ It is important to remember that the Examiner in the Australian Patent Office is expressly required to examine as to novelty: Patents Act 1952, s. 48(3)(e). This is not the case in the British Patent Office. British patents granted for programmes and methods of programming may therefore be held invalid by a court for lack of novelty should proceedings arise.

³⁴ [1975] F.S.R. 49; (1974) 44 The Australian Official Journal of Patents, Trade Marks and Designs 846. The applicant claimed a method of operating a computer "characterised by a single jump instruction controlling all jumps that might be required in an instructions memory of a computer". The specification did not require a new or modified computer. It did not describe a new or specific programme in relation to a particular type of equipment or problem to be solved. The invention was concerned with instructing a programmer how to write certain parts of a programme.

³⁵ For a comparative discussion see Pagenberg, "Patentability of Computer Programs on the National and International Level" (1974) 5 I.I.C. 1.

³⁶ [1970] R.P.C. 36.

³⁷ [1970] R.P.C. 91.

³⁸ [1973] F.S.R. 439.

The question of the patentability of the programme as a product was answered affirmatively by Graham J. in *Gevers' Application* by conceiving a punched card as an article shaped in a particular way to ensure that it is capable when placed in the computer of controlling that computer in accordance with pre-determined directions. Such an analysis would obviate the difficulties which arise in the Australian Patent Office by the artificial division of the programming means into a product which is not novel and intellectual information which is not patentable.

The question of patentability of methods of programming or controlling computers should be considered not by analyzing the method in terms of mere methods of mathematical calculation or of mere schemes or plans, but rather by considering the method as a process using the programme to make the computer work in the most satisfactory way for the solution of a problem. Graham and Whitford JJ. in *Burroughs Corporation's Application*, after a detailed examination of the previous case law, in particular, the decision of the High Court of Australia in the *National Research Development Corporation* case, concluded that a claim clearly directed to a method involving the use of apparatus modified as programmed to operate in a new way should be accepted. The earlier case law was, as the applicant contended, "entirely consistent with pure method claims provided such methods result in something useful in the practical arts or in relation to economic activity rather than in something purely intellectual or aesthetic or applicable only to the fine arts".³⁹ The *Burroughs* case was relied upon in the argument of the applicant in the Australian Patent Office in the *Telefon* case but the Hearing Officer was not prepared to accept its relevance to the claim before him.⁴⁰

It is not necessary to explore this question of patentability further. For present purposes I am concerned only to indicate that, while the concepts of patent law may be successfully applied to computer software, the application can only be done with difficulty and with considerable uncertainty. In cases where patents have been granted, as in the United Kingdom, the validity of those patents have not yet been tested in the courts. Even if it is accepted that certain methods or products are manners of manufacture within section 6 of the Statute of Monopolies it is necessary to consider the further question of whether or not the claimed invention is novel and not obvious under the Patents Act. Inventions which successfully pass the test of "manner

³⁹ [1973] F.S.R. 439, 446.

⁴⁰ A patent had been granted in the U.K. for the invention which was the subject of the application for the Australian patent under consideration in the *Telefon* case. Mr Asman in the *Telefon* case emphasized the requirement of Australian law that the Examiner make a report as to novelty. But a process claim directed to a method of operating or programming a computer so that it is modified as programmed to operate in a new way may be a novel claim.

of manufacture” may well fail to pass this further test. An additional cause of confusion, quite distinct from whether or not a patent should be granted or is valid, is the determination of the scope of the monopoly required by the programmer. What does he want to prevent others from doing? The question was asked in the *Telefon* case: “Is he seeking to prevent others from writing a programme, or from feeding a card punched in a particular way into a computer, or from executing the instructions?”⁴¹

These difficulties have led to the view that patent protection may not be appropriate for the work of computer programming. The Banks Committee in its Report on the British Patent System has recommended that programmes be excluded from patentability on the grounds that they were basically methods of mathematical calculation or sets of instructions for carrying out such calculations, and that the weight of evidence and international trends were against patentability.⁴² Programmes for computers are expressly excluded from patentability by Article 52(2)(c) of the European Patent Convention (1973), and in 1972 the Supreme Court of the United States in *Gottschalk v. Benson*⁴³ rejected an application for a patent for a computer programme. The subject matter of the claims was an operational programme for a general purpose digital computer. The claims were not limited to any particular machine or to any particular end use; the mathematical procedure could in fact be carried out without a computer. This is a case where the difficulty, referred to in *Burroughs* case, of distinguishing a claim to a mere idea or method from a claim which results in a modified apparatus or an old apparatus operating in a novel way is clearly illustrated. The Supreme Court held that to grant a patent would be to confer a monopoly in an idea and would wholly pre-empt the mathematical formula. The case also illustrates clearly the problem faced by patent law in attempting to deal with the concept of computer programme which may be claimed in very different forms such as a process to be applied by programming a computer, or as an algorithm for the solution of a problem, or as a programming means. Programmes will also have widely differing uses and purposes. These various factors make a patent solution under the present law a difficult and confusing one.

Copyright

The question of copyright protection for computer programmes raises many interesting issues which as yet are largely unexplored. As there is no system of registration for copyright in Australia under the Copyright Act 1968 (Cth) no administrative practices have developed for

⁴¹ [1975] F.S.R. 49, 57.

⁴² *Supra* n. 18, para. 483.

⁴³ (1972) 409 U.S. 63.

determining what is copyright subject matter similar to those which have developed in the Patent Office. Moreover, there has not as yet been any decision of the courts in Australia (or in the United Kingdom where the law is similar) relating to copyright protection of computer software. But despite the lack of any authoritative decision the protection of computer software under the Australian Copyright Act 1968 is, it is suggested, much wider than is commonly realized. The Whitford Committee in England in its recent Report on Copyright and Designs Law has made a strong recommendation for copyright protection for computer software, but the Committee noted that protection did exist to a large extent under the present copyright law of the United Kingdom.⁴⁴ Some minor amendments were recommended and these will be referred to hereafter. The Australian copyright law, while it is based on the United Kingdom Copyright Act of 1956, does differ from that Act in some little noted but significant respects. What measure of protection does computer software receive under the Australian law? Before looking at this question it is necessary, in order to understand the present law and its relevance for the proprietors of computer software, to consider the concept of copyright.

What is copyright? The question is surprisingly difficult to answer. In its essence copyright refers to those rights given to "authors" to prevent certain unauthorized acts in relation to their "original works".⁴⁵ But even such a general statement is misleading as the protection of copyright now extends far beyond "original works" and includes in its scope sound recordings (including tapes, cassettes, cartridges, *etcetera*), films, and television and radio broadcasts where originality is not a specific requirement for protection and the copyright is not given to the author as such but to the manufacturer, producer or broadcaster respectively.⁴⁶ It has been asserted with some degree of truth that Anglo-Australian law has never developed a consistent theory of copyright but that the approach has been a pragmatic one—that the legislature has responded to technological changes in the dissemination of written and graphic matter and of music by creation and adaptation of legal structures to secure protection for the author, and the industries which promote his work, without consideration of what copyright is or should be. The result is that the subject matter of copyright and the scope of copyright protection continue to expand with changes in the form of the "arts" and in the means by which the work of the author may be exploited. There are, however, certain basic principles inherent in the concept of copyright in Anglo-Australian law which need to be

⁴⁴ Report of the Committee to consider the Law on Copyright and Designs: Copyright and Designs Law Cmnd 6732 (1977) paras. 479, 520.

⁴⁵ The exclusive rights in relation to "works" are included in s. 31(1) of the Copyright Act 1968 (Cth).

⁴⁶ See Part IV of the Copyright Act 1968 (Cth) and, in particular, ss. 97 to 100 (ownership of copyright in subject-matter other than works).

considered in determining whether or not computer software falls within that concept.

The first basic principle is that copyright protects things, not ideas. In other words, copyright does not subsist in an idea or a scheme or information as such, but only in the form in which the idea, scheme or information is expressed by the skill or labour of the author. Copyright law, in contrast to patent law, does not give protection against the use of methods or processes. The principle is stated in the well-known U.S. case of *Baker v. Selden*:

. . . the teachings of science and the rules and methods of useful art have their final end in application and use; and this application and use are what the public derive from the publication of a book which teaches them. But as embodied and taught in a literary composition or book, their essence consists only in their statement. This alone is what is secured by the copyright. The use by another of the same methods of statement, whether in words or illustrations, in a book published for teaching the art, would undoubtedly be an infringement of the copyright. . . . The description of the art in a book, though entitled to the benefit of copyright, lays no foundation for an exclusive claim to the art itself. The object of the one is explanation; the object of the other is use. The former may be secured by copyright. The latter can only be secured, if it can be secured at all, by letters patent.⁴⁷

It is therefore important to identify the various *forms* of computer software as possible subject matter of copyright. The definition of computer software given at the beginning of this paper includes problem descriptions, operating instructions, flow charts, and programming means such as punched cards, punched tapes and magnetic tapes. The identification of copyright subject matter presents less difficulty than the determination of whether or not a programme or a programming method is patentable subject matter.

The question which follows is, what particular forms of expression are protected by copyright? The Copyright Act 1968 deals with two groups of subject matter. The first group comprises original literary, dramatic, musical and artistic works (referred to as "works").⁴⁸ The second group comprises sound recordings, cinematograph films, television and radio broadcasts, and printed editions (typographical arrangements) of works.⁴⁹ The division represents a basic difference in philosophy. The material in the second group has fallen under the umbrella of copyright law largely because recordings, films and broadcasts have become important means of disseminating works in this century, particularly in the case of musical works. Copyright in original

⁴⁷ (1879) 101 U.S.R. 99, 104-105.

⁴⁸ Copyright Act 1968, Part III (Cth).

⁴⁹ *Id.* Part IV.

works is an author's copyright: the author is the first owner of the copyright and the term of copyright is generally 50 years from the expiration of the calendar year in which the author died.⁵⁰ Copyright in the material in the second group is a manufacturer's or producer's copyright: no originality is required, and the making organization or broadcaster is the first owner of the copyright.⁵¹ The relevant classifications of subject matter in relation to computer software are literary and artistic works and sound recordings.

The second basic principle of copyright law, and an important distinction between the patent and copyright monopolies, is that a copyright confers on the owner no exclusive monopoly which prevents a subsequent author from creating independently a similar or identical work without infringing the copyright of the first author.

One may infringe a patent by the innocent reproduction of the machine patented, but the law imposes no prohibition upon those who, without copying, independently arrive at the precise combination of words or notes which have been copyrighted. . . . The author's copyright is an absolute right to prevent others from copying his original collocation of words or notes, and does not depend upon the infringer's good faith. Once it appears that another has in fact used the copyright as the source of his production, he has invaded the author's rights.⁵²

The exclusive rights conferred on the copyright owner of a work, by section 31 of the 1968 Act, are essentially those of reproduction, publication and performance. "Reproduction" is not precisely defined but section 21 of the Act provides as follows:

(1) For the purposes of this Act, a literary, dramatic or musical work shall be deemed to have been reproduced in a material form if a sound recording or cinematograph film is made of the work, and any record embodying such a recording and any copy of such a film shall be deemed to be a reproduction of the work.

(2) The last preceding sub-section applies in relation to an adaptation of a work in like manner as it applies in relation to a work.

(3) For the purposes of this Act, an artistic work shall be deemed to have been reproduced—

(a) in the case of a work in a two-dimensional form—if a version of the work is produced in a three-dimensional form; or

(b) in the case of a work in a three-dimensional form—if a version of the work is produced in a two-dimensional form, and the version of the work so produced shall be deemed to be a reproduction of the work.

⁵⁰ *Id.* ss. 35(2), 33(2).

⁵¹ *Id.* ss. 92(2), 98(2), 99, 100.

⁵² *Fred Fisher Inc. v. Dillingham* (1924) 298 F. 145, 147-148.

“Copy” is not defined in the Act except in the case of cinematograph films and infringing copies, but in the definition in section 10 an “infringing” copy in relation to a work means a reproduction of the work. A defendant does not avoid infringement by reproducing or copying only part of a work or other subject matter unless such part is not a substantial part, determined in a qualitative as well as a quantitative manner, in relation to the work as a whole.⁵³

Can general similarity constitute “reproduction” or must there be exact copying? It has been suggested that the test for determining whether a work is a copy or reproduction of another is whether it comes so near to the original as to suggest that original to the mind of every person seeing it.⁵⁴ Not only must there be sufficient objective similarity between the plaintiff’s work and the alleged infringing work in a substantial part, but there must also be some causal connection between the two works, and it is irrelevant to inquire whether the defendant was or was not consciously aware of such causal connection.⁵⁵ A substantial degree of objective similarity will be prima facie evidence of a causal connection between the plaintiff’s work and the defendant’s work, and it then becomes a question of fact to determine whether the degree of objective similarity is sufficient to warrant the inference, in the particular case, that causal connection exists.

Since it is not an infringement of copyright in a work to produce a similar or even identical work if such work is not copied, consciously or sub-consciously, from the prior work, so it follows that it is not necessary that a work be novel, or previously unpublished in Australia, in order that copyright might subsist in it. The requirement of section 32 of the 1968 Act is that a work be original in order that copyright might subsist in it, not that it be new or unpublished. However, the criterion of originality applies only to works, not to sound recordings, films, television and radio broadcasts and published editions. Thus the existence in the prior art of substantially the same work will not of itself invalidate the copyright in the later work and it is no defence to a copyright infringement action that such prior art exists. Prior art may, however, be significant in disproving copying.⁵⁶

The third basic principle which must be referred to is that the first owner of copyright in a work is generally the author.⁵⁷ Subsistence of copyright may also depend upon nationality of the author.⁵⁸ An author must therefore be identified (unless the work is anonymous or pseudony-

⁵³ Copyright Act 1968, s. 14 (Cth). See, e.g., *Ladbroke (Football) Ltd v. William Hill (Football) Ltd* [1964] 1 W.L.R. 273, 288.

⁵⁴ *King Features Syndicate Inc. v. O. & M. Kleeman Ltd* [1941] A.C. 417, 424.

⁵⁵ *Francis Day & Hunter Ltd v. Bron* [1963] Ch. 587.

⁵⁶ See, e.g., the discussion of prior art in *Fred Fisher Inc. v. Dillingham* (1924) 298 F. 145.

⁵⁷ Copyright Act 1968, s. 35(2) (Cth).

⁵⁸ *Id.* s. 32(1), 2(c) and (4).

mous in which case special provisions apply). But who is the author of a work? The Copyright Act gives no definition except in the case of photographs where the author is defined in section 10 as the person who took the photograph. However, if it is the original material form of expression protected by copyright law, presumably the author is the person who first puts the ideas into that form, provided, of course, that there is some skill or mental labour involved in so doing. The quantum of skill or labour that is necessary is equally relevant in determining originality, and the concepts of originality and authorship are aspects of the same question.⁵⁹ There may be many difficult cases where the identity of the author is not clear, cases, for example, where there has been considerable editing and re-editing of material by different persons, but the essential factor is that it is to the material form of expression that the protection of copyright law is given and the concepts of authorship and originality have their meaning within the context of this limitation.

The Whitford Committee, in considering whether copyright law in the United Kingdom does in fact provide some protection for computer software, concluded that a programme which involved a sufficient measure of skill or labour would be protected as a literary or artistic work and that programmes in the form of punched cards, and recordings on magnetic tapes and discs would also be protected.⁶⁰ The copyright law in Australia under the 1968 Act is not identical to the United Kingdom law, and it is not clear that a similar protection would exist in this country. The problem is simply the extent to which the forms of computer software fall within those particular forms of expression included within the protection of the Copyright Act 1968.

The 1968 Act provides for subsistence of copyright in original literary works but does not attempt to give a comprehensive definition of "literary work". The Act merely provides, in section 10, that literary work *includes* a written table or compilation, and that "writing" means a mode of representing or reproducing words, figures or symbols in a visible form. A literary work is made for the purposes of the Act when it is first reduced to writing or to some other material form.⁶¹ Diagrams, charts and plans are categorized as artistic, not literary, works.⁶² The law makes no judgment about literary or artistic merit or style and regards the word "literary" as referring to written or printed matter,⁶³ and "writing" or "written" includes all visible forms of representing or reproducing words, figures or symbols.⁶⁴ A flowchart would clearly be

⁵⁹ *Sands & McDougall Pty Ltd v. Robinson* (1917) 23 C.L.R. 49.

⁶⁰ *Supra* n. 44, paras. 479, 492.

⁶¹ Copyright Act 1968, s. 22(1) (Cth).

⁶² *Id.* s. 10, definitions of "artistic work" and "drawing".

⁶³ *University of London Press, Ltd v. University Tutorial Press, Ltd* [1916] 2 Ch. 601.

⁶⁴ Copyright Act 1968, s. 10 (Cth) definition of "writing".

an artistic work. All problem descriptions and operating instructions which are human readable would constitute literary works. It is not relevant that the material does not make sense. A code has been held to be a literary work for copyright purposes.⁶⁵ But is the machine readable material literary work? It is suggested that punched cards or tapes are literary works on the basis that the punched holes are a mode of representing or reproducing words, figures or symbols in a visible form. The position is probably clearer under the United Kingdom Copyright Act of 1956, where writing is defined as including any form of notation, but it is arguable that the result would not be different under the 1968 Act in Australia. The definition of "writing" in the Australian Act would, however, exclude magnetic tapes and discs as the material embodied in them is not visible. It would also seem that tapes and discs are not sound recordings within the meaning of the 1968 Act. A "sound recording" is defined in section 10 as the aggregate of the *sounds* embodied in a record. A "record" is also defined in section 10 as the material substance (disc, tape, paper or other device) in which the *sounds* are embodied. It can hardly be said that a tape or disc on which machine readable material is recorded is an embodiment of sounds. Although it may be possible to hear sounds amplified from them it is doubtful that these are the types of sound contemplated by the Act. May a magnetic tape or disc in which material is embodied constitute a literary work? A literary work is made when it is first reduced to writing *or to some other material form* and it is arguable that the embodiment of the programme instructions in the carrier (card, tape, disc, *etcetera*) is the reduction of it to a material form. If this is so, computer software, comprising both the machine readable material and the printed instructions, is protected by copyright.

The Whitford Committee considered that copyright was an appropriate form of protection for computer software and discussion was directed to the question of the adequacy of the existing categories of copyright work. It was suggested to the Committee either that computer programmes should be treated as a special category of work in any new copyright law or that the existing definition of "literary work" should be extended specifically to include "any written computer programme" and the definition of "writing" extended to include "notation expressed in the form of punched holes or of magnetic signs or symbols".⁶⁶ Definitions would then be required of "computer" and "computer programme". The Committee took the view that no special provision was required as the existing categories of literary and artistic works were sufficiently wide to cover computer programmes, and that it was only necessary to amend the Copyright Act to make it clear that copyright subsisted in any work recorded in such a way that it

⁶⁵ *Anderson v. The Lieber Code* [1917] 2 K.B. 469.

⁶⁶ *Supra* n. 44, paras. 490, 491.

could be reproduced.⁶⁷ The Committee concluded that, in its view, it was quite immaterial that a programme was not visible to or readable by the human eye, or was not directly understandable by the human brain, or that it was first “fixed” in written form, as a recording or in any other way.⁶⁸ These conclusions would seem to be equally applicable to the Australian law with one qualification. As stated previously, the definition of “writing” refers to a visible mode of representation or reproduction. To avoid doubt an amendment similar to that suggested to the Whitford Committee would be preferable. Indeed, having regard to the clear difficulties and uncertainties in applying existing copyright concepts to computer programmes, it is clear that some clarification is needed. The terms “literary” and “artistic” works suggest works of the fine arts such as books, paintings, drawings, and so on, and reflect the historical development of the copyright concept. The Whitford Committee has suggested a more radical solution in an earlier part of its Report.⁶⁹ The Committee put forward a definition of copyright as a basic starting point without giving comprehensive definitions of particular subject matter. The essential concept of copyright as suggested by the Committee was “a right subsisting in relation to all original works, meaning by the word ‘original’ the product of some person’s skill and/or labour, if fixed so that they can be reproduced”.⁷⁰ It is these two aspects of copyright, namely, the protection of skill and labour, or human creative effort, and the importance of the expression (the “fixation”) in the various forms of computer software package (programme, flow charts, descriptions, instructions, manuals, and other explanatory material) which have led to a preference for a copyright solution.⁷¹

The most difficult problem remains. If computer software can be protected by copyright what is the nature of this protection? What will constitute copyright infringement of computer software? The monopoly given by a patent is the exclusive right to make, use, exercise and sell the patented product or process.⁷² Copyright is more limited. As stated previously, copyright does not as such give an exclusive right to use a work. Copyright is in essence the exclusive right to do certain acts in relation to copies or reproductions of a work. However, the protection given by existing copyright law is much wider than is commonly understood. The four most important rights of the copyright owner in the context of the present discussion are the reproduction right, the publication right, the translation right and the right to prevent dealings

⁶⁷ *Id.* para. 492.

⁶⁸ *Ibid.*

⁶⁹ *Supra* n. 44, paras. 33 and 34.

⁷⁰ *Id.* para. 34.

⁷¹ Report of the Advisory Group of Non-Governmental Experts on the Protection of Computer Programs, 2nd Session, Geneva, 1975, AGCP/NGO/II/II, 2-4.

⁷² Patents Act 1952, s. 69 (Cth).

in illegal copies.⁷³ It is only the first of these rights which causes any substantial difficulty in its application to computer software. The publication right is in fact a right to distribute copies to the public.⁷⁴ The translation right would, it is suggested, give the owner the right to prevent the translation of computer programmes from one computer language to another, and possibly from a programming language into machine code instructions.⁷⁵ The reproduction right, under section 21(1) of the 1968 Act, is a right to reproduce a work *in any material form*. Reproduction of computer software (in whatever form of literary or artistic work) in the form of punched cards or tape or in the form of magnetic tape is reproduction in a material form. There is no requirement that what is embodied in the material form should be human readable or visible. The idea, of course, is that one should not be able to reproduce a work such as a piece of music by making a gramophone recording or cassette of it—the usual form of commercial exploitation. But the provision is not in its terms so limited. It should also be emphasized that it is only necessary to reproduce a substantial part of a work in order to commit an infringing act, and what is a substantial part depends on the quality of what is copied rather than the quantity.⁷⁶ It follows, as the Whitford Committee pointed out, that “the copying of a vital sub-routine or an elaborate and crucial algorithm would constitute infringement even though the whole programme was not taken”.⁷⁷ Another important consideration, which cannot be discussed in detail, is that although copyright does not subsist in an idea and a work must be “fixed” in a material form before copyright can subsist in it under the 1968 Act, it is not true to say that copyright in the work is not infringed by plagiarism of the ideas of the work. The question is a difficult one but it is sufficient to point out that infringement is not limited to textual infringement, and a structural or pattern test may clearly indicate sufficient plagiarism to constitute infringement.⁷⁸ It may, therefore, be an infringement to use a computer programme to produce the same or a substantially similar computer programme or a substantially similar programme description or to use the programme description to produce a substantially similar programme description or a corresponding computer programme. But would it be

⁷³ Copyright Act 1968 (Cth), s. 31(1)(a)(ii) (publication right); s. 31(1)(a)(vi) and s. 10 (translation right); ss. 37 and 38 (dealings in infringing copies).

⁷⁴ The publication right in s. 31(1)(a)(ii) of the Copyright Act 1968 (Cth) is not a right only of *first* publication. The definition of publication in s. 29(1)(a) of the Act refers to the supply of reproductions of a work to the public. This is an extensive right of the copyright owner under Australian law. It is a new right in the 1968 Act and it is not clear that it was intended that the right should extend beyond a right of *first* publication.

⁷⁵ *Supra* n. 44, para. 496.

⁷⁶ *Supra* n. 53.

⁷⁷ *Supra* n. 44, para. 488.

⁷⁸ See, e.g., *Nichols v. Universal Pictures Corp.* (1930) 45 F. (2d) 119.

an infringing act to use a computer programme to control the operation of a data-processing machine or to store it in the machine? There are no clear answers to this question. All that can be said with regard to the position under the present law is that infringement will only occur to the extent that the programme is reproduced in a material form in the computer store. It is suggested that computer storage of a copyright work should be treated as a reproduction of that work. But doubts have been expressed and the Whitford Committee recommended that storage of a programme in a computer store should be a restricted act and that an express provision should be made to this effect in any new legislation to clarify the matter.⁷⁹ The problem of adequate protection against use of the programme to control or condition the operation of a computer was also discussed by the Committee.⁸⁰ The Committee acknowledged the difficulty of detection of infringement, but a majority recommended that unauthorised use of computer programmes to control or condition the operation of computers should be an infringement. The majority considered that the whole point of the creation of programmes was to exploit them by use and use should be protected.

One final point needs to be made in connection with infringement by use and that is that the Copyright Act 1968 (Cth) does provide in sections 37 and 38 that certain dealings with infringing articles constitute copyright infringement. These dealings are:

- (1) importing an article into Australia for sale or hire, or for distribution or exhibition for purposes of trade (or any other distribution prejudicial to the copyright owner) if it would have been a copyright infringement for the importer to make the article in Australia and the importer knew this;
- (2) any of the dealings referred to in (1) if the article is an infringing article, and the person engaged in any of these dealings knew this, or, in the case of an imported article, he knew that it would have infringed if made in Australia by the importer.

In conclusion, it is important to note that there are two features of protection by way of copyright which give to copyright very clear advantages over a patent type protection. First, copyright subsists when a work is "made", provided there exists the necessary connecting factor between the work and its author or place of first publication.⁸¹ No application or registration of any kind is necessary. The advantage is that there is no delay in gaining protection. The disadvantage is that it is not possible to search any register of copyrights and find out what is and what is not protected. Secondly, copyright protection is international between the members of the Universal Copyright Convention

⁷⁹ *Supra* n. 44, paras. 498, 508 and 520(ii).

⁸⁰ *Id.* para. 499.

⁸¹ Copyright Act 1968, s. 32 (Cth).

and the Berne Convention.⁸² This is probably one of the most valuable aspects of copyright protection. The only formality which is required is that if protection is sought in a member country of the Universal Convention, and that country requires compliance with formalities such as registration (the United States is one such country), then those requirements are regarded as satisfied as regards foreign works if copies of the work bear, from the time of first publication, the symbol © accompanied by the name of the copyright proprietor and the year of first publication.⁸³

International Developments

The Advisory Group of Non-Governmental Experts on the Protection of Computer Programmes met in Geneva from June 1 to 3, 1977 to discuss draft model provisions for a national law on the protection of computer software. The Advisory Group agreed on the text of those provisions.⁸⁴ An earlier draft was discussed at a similar meeting in 1976. The work has been undertaken by the International Bureau of the World Intellectual Property Organization and the latest draft provides for the introduction of a special type of protection but based upon the copyright concept. The requirement for protection of computer software is the originality of copyright law, that is, the creator's own intellectual effort, but the unlawful acts include unauthorized use and disclosure of the programme. It is arguable whether it is desirable to proceed in this way when existing forms of protection are not clearly understood. A more basic difficulty is that it seems that the computer software industry is not at all clear as to what is the scope of protection required in terms of the protection now available. A recent commentator asserts that programmers should use now all the possibilities available to them under existing national laws, and that the development of a special form of protection has arisen because copyright protection is underestimated and the requirements for patentability are applied too strictly.⁸⁵

Compilations of Data

Another issue which arises in the context of copyright is the extent to which a compilation of data suitable for use with a computer, or a "data base", is given protection by the law apart from the programmes

⁸² The Conventions require certain minimum levels of protection, but the nature of the protection in a particular case must be sought in the relevant foreign law. It is not, however, necessary to make any application or registration for copyright protection in the member countries. In Australia the 1968 Act is applied to those countries specified in the Schedules to the Copyright (International Protection) Regulations passed pursuant to s. 184 of the Act. The specified countries are the member countries of the two Conventions referred to.

⁸³ Universal Copyright Convention, Article III, 1.

⁸⁴ A report of the meeting appears in (1977) 13 Copyright 271.

⁸⁵ Gotzen, "Copyright and the Computer" (1977) 13 Copyright 15.

themselves. It would seem that the problems in the protection of such material are no different from those previously discussed in relation to protection of computer software by copyright. A compilation of data can be treated for copyright purposes as a literary work in which copyright can subsist provided that the work is "original". The Copyright Act 1968 (Cth) specifically includes compilations and tables in the definition of "literary work" in section 10 and copyright has been held to subsist in such material as football fixture lists, catalogues, street directories, and collections of information.⁸⁶ The originality consists in the labour and skill involved in the selection and preparation of the data.

The Whitford Committee considered whether or not explicit provision should be made for the protection of such compilations but concluded that this was not necessary.⁸⁷ The Committee recommended that compilations of data should be treated as literary works for copyright purposes in the same way as the Committee recommended for computer programmes.

Infringement of Intellectual Property Rights by Computer Storage and Retrieval

A matter of growing concern to authors and other copyright owners is the question of protection against the unauthorised feeding of works into computer stores and retrieval of this material. The storage and retrieval of protected works present challenges to the copyright system which must be resolved in the interests of both owners and users of those works. At the present time the user has no certainty that copyrights are not being infringed either at the input or the output stage, and the copyright owner is equally uncertain as to the extent to which his work is protected, if at all. The urgency of seeking a resolution of the problem was clearly stated by the Whitford Committee which referred to the development of sophisticated computerised information storage and retrieval systems which could revolutionise information dissemination as we know it today, even to the extent of replacing printed works completely: "It has been suggested that the day may come when all homes and offices throughout the country are linked to a national computer centre via viewer/printer console. Works of reference would in that case be particularly vulnerable. The sale of just one copy of a work to the national centre would result in its contents, or a selection thereof, being made available throughout the country."⁸⁸ It is

⁸⁶ See, e.g., *Football League Ltd v. Littlewoods Pools Ltd* [1959] Ch. 637 (football fixture lists); *Purefoy Engineering Co. Ltd v. Sykes Boxall & Co. Ltd* (1955) 72 R.P.C. 89 (catalogues); *Mander v. O'Brien* [1934] S.A.S.R. 87 (a race programme).

⁸⁷ *Supra* n. 44, para. 504.

⁸⁸ *Id.* para. 506.

not simply a question of the use of technical books and articles but of the use of works of art and literature generally.⁸⁹

What is the position under the present copyright law, in relation to input or storage of protected works and, secondly, in relation to retrieval of protected works? The answer to the first question is that it is an infringement of copyright in a work under the 1968 Act if input into a computer is a reproduction in a material form.⁹⁰ What reproduction in a material form means, or what it is thought to mean, has been discussed previously, and it seems clear that if a copyright work is stored in a computer through the medium of tape (magnetic or punched) an infringing act has been committed. In terms of the basic concepts of copyright law computer storage is a form of "fixation" of the work which should constitute an infringing act. Much of the controversy and uncertainty on the question of infringement by input has arisen because the concept of reproduction in a material form has been thought of essentially in terms of recordings (including tapes and cassettes) and films which embody music, drama, and so on. But the concept is not so limited and can encompass data storage. A doubt was expressed by the Whitford Committee whether or not there would be an infringement if direct optical input were used or if information were manually keyed in.⁹¹ To avoid uncertainty the Committee recommended that the storage of all copyright material in a computer store should be an exclusive right of the copyright owner.⁹² That such storage without authority is an infringement of copyright has also been made clear in the definition of "copies" in section 101 of the General Revision of Copyright Law in the United States.⁹³

A computer print-out of a work, or a substantial part of a work in which copyright subsists would constitute an infringement of the copyright. If there is some "fixation", for example, in the form of printed material, the same principles will apply as apply in any other case of infringement by reproduction in the form of the printed word, a sound recording or film. There are no special difficulties. It must be recalled in this context that the copyright owner has an exclusive translation right under section 31(1)(a)(vi) of the 1968 Act and conversion of the work into another "language" may constitute an infringement of the copyright. The issue of reproduction by computer

⁸⁹ Gotzen, "Copyright and the Computer" (1977) 13 Copyright 15, 19.

⁹⁰ Copyright Act 1968, s. 31(1)(a)(i) (Cth).

⁹¹ *Supra* n. 44, para. 507.

⁹² *Id.* para. 520(ii).

⁹³ Title 17, USC (Public Law 94-553, October 19, 1976). The definition is as follows:

"Copies" are material objects, other than phonorecords, in which a work is fixed by any method now known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. The term "copies" includes the material object, other than a phonorecord, in which the work is first fixed.

retrieval in the manner referred to poses problems very similar to those which have arisen in the use of modern photo copying machines, and in the use of microfilm and microfiche, for purposes of teaching and the dissemination of information. The problem here is the need to strike a balance between the requirements of the public to make use of new technology to the best advantage for acquiring information and the need to give to the author and publisher an adequate return for their skill and labour and to encourage the publication of original work. An examination of these issues is beyond the scope of this article.⁹⁴

A more complex situation arises if, in effecting the retrieval, there is no print-out but instead a projection of information on a screen. In this case also it is suggested that copyright law has a wider impact than is commonly supposed. The copyright owner has, in addition to the rights previously referred to, the exclusive rights of public performance, broadcasting and diffusion.⁹⁵ A performance is defined in section 27(1)(a) of the 1968 Act as including any mode of visual or oral presentation, whether the presentation is by the operation of wireless telegraphy apparatus, by the exhibition of a cinematograph film, by the use of a record or by any other means. If the presentation were "in public" an infringement of copyright might clearly be committed. On the other hand, if the display took place on behalf of an individual who is a subscriber to a service the diffusion right might be infringed. This right is, under section 26(1) of the 1968 Act, the right to transmit a work or other subject matter in the course of a service of distributing broadcast or other matter over wires, or over paths provided by a material substance, to the premises of subscribers to the service. In contrast, broadcasting means broadcasting by wireless telegraphy, that is, transmission of electromagnetic energy *otherwise* than over a path provided by a material substance.⁹⁶ The 1968 Act does not specifically require that broadcasting should have a public character. Much of the international doubt as to possible copyright infringement by retrieval of protected works in the form of projection arises because copyright laws in most countries do not deal with transitory displays which do not constitute public performance. Perhaps the copyright owner should have a specific "display right" as is given in section 106(5) of the United States General Revision of Copyright Law.⁹⁷ The diffusion right

⁹⁴ See the recent Report of the Copyright Law Committee on Reprographic Reproduction (the Franki Committee), A.G.P.S., Canberra, 1976. The question of reproduction through computer use was not considered.

⁹⁵ Copyright Act 1968, s. 31(1)(a) (iii), (iv) and (v) (Cth).

⁹⁶ *Id.* s.10 (definitions of "broadcast" and "wireless telegraphy").

⁹⁷ *Supra* n. 93. To "display" a work is defined in s. 101 as "to show a copy of it, either directly or by means of a film, slide, television image, or any other device or process or, in the case of a motion picture or other audiovisual work, to show individual images nonsequentially".

under the Australian Act is limited to the operation of diffusion services for subscribers.

Conclusion

It has not been possible in this article to deal with many other important aspects of the protection of intellectual property. The law of confidential information gives a certain amount of protection to computer software and is particularly important in employer-employee situations. In relation to copyright, questions of authorship, duration of protection, and the defence of fair dealing need to be considered. But perhaps the most important matter to decide is what means need to be devised for compensating those who give original work to the community, and also for protecting the integrity of their work, and what are the needs of the community for ready access to information and knowledge. The law of copyright has traditionally been the legal focus for answers to these questions and it can continue to fulfil this role, with suitable amendments if these are considered desirable. A considerable amount of protection already exists under the law of intellectual property. We need now to ask whether additional protection is needed or whether clarification of the existing law is all that is required to remedy those deficiencies which are thought to exist. As has been pointed out, a form of protection based upon copyright is now being widely discussed, and in terms of the material protected (machine readable material and programme documentation which is the result of original work) this is probably the preferred solution. The nature and extent of the protection at present available under Australian copyright law must form the basis for further study in any attempt to arrive at a resolution of the question of adequate protection of computer software.