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COMPUTER SOFTWARE PROTECTION: THE COPYRIGHT REVISION BILLS AND ALTERNATIVES

by Joseph Scafetta, Jr.*

INTRODUCTION

Whether computer applications software, or programs as they are more commonly known, is copyrightable is presently a question of controversy. In addition, what computer software is patentable is also presently a question of some controversy. Computer software is a square peg that does not fit into the round holes of either copyright or patent. The primary reason for this is that the development of computer software for commercial use did not begin until 1953, and the last substantial revisions of the federal statutory laws in the areas of copyright and patent had occurred beforehand with the enactment of the Patent Act¹ of 1952 and the Copyright Act² of 1909, as codified in 1947.

The constitutional grant to Congress³ and the Copyright Act⁴ of 1909 passed thereunder both refer to the "writings" of an "author." Although Congress has expanded⁵ the word

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35 U.S.C. § 1 et seq. (1970).
17 U.S.C. § 1 et seq. (1970).
U.S. CONST. art. I, § 8, cl. 8 provides:

The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoverence.

4. 17 U.S.C. § 4 (1970) provides: "The works for which copyright may be secured under this title shall include all the writings of an au-thor."

5. 17 U.S.C. § 5 (1970) provides: The application for registration shall specify to which of the fol-lowing classes the work in which copyright is claimed belongs:

(a) Books, including composite and cyclopedic works, directories, gazetteers, and other compilations.
 (b) Periodicals, including newspapers.

(c) Lectures, sermons, addresses (prepared for oral delivery).
(d) Dramatic or dramatico-musical compositions.
(e) Musical compositions.
(f) Maps.

(g) Works of art; models or designs for works of art.

^{*} Law Clerk, Hon. Robert W. Hemphill, United States District Judge for South Carolina; Member, Court of Customs & Patent Appeals Bar, 1974; Registered Attorney, U. S. Patent Office, 1973; Member, Penn-sylvania Supreme Court Bar, 1972; M.Pat.L., Georgetown University, 1973; J.D., University of Pittsburgh, 1972; B.S.Aero.E., Pennsylvania State University, 1969; Member, American Bar Association, Patent-Copyright-Trademark Section; Member, American Patent Law Associa-tion: Mr. Scafetta is now associated with the law firm of Colton &

"writing" to include matter which is not ordinarily considered to be writing, neither the Congress nor the courts have ever specifically sanctioned copyrighting computer software.

This article will discuss the inadequacy of computer software protection under the copyright revision bills, and the undesirability of copyright protection from a practical standpoint. Alternative forms of protection for computer software will also be discussed. Finally, recommendations will be made for creating a right to meaningful protection. However, before these issues are discussed, an understanding of the function of software in a computer is essential.

The Computer System

The two basic kinds of computers are "analog" and "digital." The analog is the more elegant system in that it provides a "continuous" representation of a changing physical system. The "output" of an analog appears as the operation of a printing press, flow control in an oil refinery, synchronization of machinery in an industrial plant assembly line, or the tracking of a guided missile.

The digital makes use of "discrete" quantities which are manipulated to generate the desired result or answer. The digital is more widely known to the layman and more developed due to its high accuracy and general purpose use. The output of a digital appears in the form of a mathematical or scientific calculation, a stack of payroll checks, or an educational text. There are two basic types of digital computers. A "special purpose" digital is the first type. It has a single mode of operation and is dedicated to a single application.⁶ The other type is the "general purpose" digital. It has been characterized by the Patent Office as "merely a 'warehouse of unrelated parts.' "7

"Hardware" is the term used in the trade for the assembly of disconnected and inoperative circuits and apparati within the general purpose digital. The hardware is rendered practicable by the use of "systems software."⁸ The systems software is an

ter.

(m) Motion picture photoplays.
(m) Sound recordings.
6. Brief for Mobil Oil Corp. as Amicus Curiae at 18, Gottschalk v. Benson, 409 U.S. 63 (1972). 7. Guidelines, 829 O.G. Pat. Off. 1 (1966).

8. Brief for American Patent Law Ass'n as Amicus Curiae at 9, Gottschalk v. Benson, 409 U.S. 63 (1972).

⁽h) Reproductions of a work of art.

⁽i) Drawings or plastic works of a scientific or technical charac-

 ⁽j) Photographs.
 (k) Prints and pictorial illustrations including prints or labels used for articles of merchandise.

⁽¹⁾ Motion-picture photoplays.

input via machine-readable cards or magnetic tape by which switches are set to "wire" the electronic circuits so they function as may be required by any subsequent "applications software."⁹ Applications software is a synonym in the trade for the more commonly used term "program." It is a series of machine-readable representations on a deck of cards or magnetic tape which directs the operation of the general purpose digital computer through a desired procedure or "algorithm."¹⁰ An algorithm is a prescribed set of well-defined rules or processes for the solution of a problem in a finite number of steps, e.g., a full statement of an arithmetic procedure for an evaluation, to a stated degree of precision.¹¹

Thus, software is a generic name for various inputs to computers. It is also called "instant hardware" because, upon its input into the general purpose digital computer, it causes the computer automatically to make circuit connections so that it may process electrical signals in a way determined by the connections in the same manner as if the circuits were hand-soldered upon order. Since the general purpose digital computer is simply an organized storeroom of electrical components waiting to be interconnected in any manner by the introduction of software, the valuable part of the computer system lies in the "instructions" or "soldering orders" of the software.¹²

Background

Computer programs have been accepted¹³ for copyright registration since 1964. While the Copyright Act makes no reference to computer programs, the Copyright Office determined that computer programs were covered by the general provisions of the statute as a book in Class A. The announcement itself expressed misgivings as to whether computer programs are proper subject matter for copyright. The Copyright Office said:

The registrability of computer programs involves two basic questions: (1) Whether a program as such is the 'writing of an author' and thus copyrightable, and (2) whether a reproduction of the program in a form actually used to operate or be 'read' by a machine is a 'copy' that can be accepted for copyright registration.

^{9.} Id.

^{10.} Id. at 10. 11. JOINT TECHNICAL COMMITTEE ON TERMINOLOGY OF THE INTERNA-TIONAL FEDERATION FOR INFORMATION PROCESSING AND INTERNATIONAL COMPUTATION CENTRE, IFIP-ICC VOCABULARY OF INFORMATION PROCESSING 13 (1966)

^{12.} Note 6 supra at 10.

^{13.} Announcement from the Copyright Office, Copyright Registration for Computer Programs, 11 BULL. COPYRIGHT SOC'Y 361 (1964).

Both of these are doubtful questions. However, in accordance with its policy of resolving doubtful issues in favor of registration wherever possible, the Copyright Office will consider registration for a computer program . . . if [certain requirements have been met]¹⁴

The Copyright Office went on to decide that computer programs are readable, have authors, and are writings. Thus, copyright registration for programs was found appropriate because writing a program is analogous to writing other literary works.

From the date that the Copyright Office adopted the policy of accepting registration of computer programs, many of the programs that have been registered belong to the big three hardware manufacturers.¹⁵ These firms usually give the software away free to purchasers of their hardware. Most of the remaining programs belong to small independent software devel-They generally grant a license to the computer user opers. permitting the user to copy and run the program.

THE REVISION BILLS

Since 1964, numerous bills¹⁶ have been introduced into Congress to substantially liberalize the copyright law. Most of the bills were similar in content. All were totally unsuccessful except for one¹⁷ which passed the House but was not acted upon by the Senate and another¹⁸ which passed the Senate but was not acted upon by the House. However, compromise appears evident with the computer software provisions remaining substantially unchanged from the present proposed text.

The House and Senate bills currently in Congress are identical containing the same provisions on computer programs. In these latest bills,¹⁹ there are two pertinent provisions, section 102 and section 117. Section 102(a) provides:

Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of

(1975).

^{14.} Id.

^{15.} Burroughs Corp., Honeywell, Inc., and IBM Corp.

Burroughs Corp., Honeywell, Inc., and IBM Corp.
 S. 22, 94th Cong., 1st Sess. (1975); H.R. 2223, 94th Cong., 1st Sess. (1975); H.R. 14922, H.R. 15522, 93d Cong., 2d Sess. (1974); H.R. 8186, 93d Cong., 1st Sess. (1973); S. 1361, 93d Cong., 1st Sess. (1973); S. 644, 92d Cong., 1st Sess. (1971); S. 543, 91st Cong., 1st Sess. (1969); H.R. 2512, H.R. 5650, 90th Cong., 1st Sess. (1967); S. 597, 90th Cong., 1st Sess. (1967); H.R. 4347, H.R. 5680, H.R. 6831, H.R. 6835, 89th Cong., 1st Sess. (1965); S. 1006, 89th Cong., 1st Sess. (1965); H.R. 11947, H.R. 12354, 88th Cong., 2d Sess. (1964); S. 3008, 88th Cong., 2d Sess. (1964).
 H.R. 2512, 90th Cong., 1st Sess. (1967).
 S. 1261, 93d Cong., 1st Sess. (1973).
 S. 22, 94th Cong., 1st Sess. (1975); H.R. 2223, 94th Cong., 1st Sess. (1975).

expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device (emphasis added).

At first blush, it appears that computer software is included in such a general statement of the subject matter of copyright because both software input in the form of cards or tape and computer output are "fixed in [a] tangible medium of expression . . . from which they can be perceived, reproduced. or otherwise communicated, either directly or with the aid of a machine or device." However, the subsection goes on to divide "original works of authorship" into seven categories.20 Computer programs are not included. Nevertheless, section 102 (a) (1), covering "literary works," appears to protect printed computer output in the nature of text, educational or otherwise, and perhaps would also protect the form of any software instructions used in the printing of such texts. This belief is sustained by the definitional section, section 101, which provides:

'Literary works' are works other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, or film, in which they are embodied.

The terms 'including' and 'such as' are illustrative and not limitative (emphasis added).

It is doubtful whether such a classification would withstand constitutional attack in the courts as a "writing of an author" both as to types of output of a functional nature or as to the concept behind any software instructions. This doubt is supported by section 102(b) which provides:

In no case does copyright protection for an original work of authorship extend to any idea, plan, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work (emphasis added).

The only section that explicitly mentions computers is section 117²¹ which is entitled "Scope of exclusive rights: Use in conjunction with computers and similar information systems." The section provides:

^{20. § 102(}a) of both bills further provides:

Works of authorship include the following categories:

 ⁽¹⁾ literary works;
 (2) musical works, including any accompanying words;

⁽³⁾ dramatic works, including any accompanying music:

 ⁽⁴⁾ pantomimes and choreographic works;
 (5) pictorial, graphic, and sculptural works;

⁽⁶⁾ motion pictures and other audiovisual works;

⁽⁷⁾ sound recordings.
21. The legislative history of this section appears in S. Rep. No. 93-983, 93d Cong., 2d Sess. 154-55, 208-09 (1974).

Notwithstanding the provisions of sections 106 through 116, this title does not afford to the owner of copyright in a work any greater or lesser rights with respect to the use of the work in conjunction with automatic systems capable of storing, processing, retrieving, or transferring information, or in conjunction with any similar device, machine, or process, than those afforded to works under the law, whether title 17 or the common law or statutes of a State, in effect on December 31, 1976, as held applicable and construed by a court in an action brought under this title (emphasis added).

This section is relevant to the discussion of future copyright protection because it covers the intended effect of the proposed statute on the copyrightability of computer programs. It expresses the intention to neither broaden nor narrow the scope of future copyright protection, but only to freeze such protection at its existing scope on the future date stated in the statute. Thus, no change in the present policy is intended pending the results of a commission study.

Title II of the bills provided for the establishment of a National Commission on New Technological Uses of Copyrighted Works and has been enacted into law.^{21a} Its function is stated in section 201(b):

The purpose of the Commission is to study and compile data on:

(1) the reproduction and use of copyrighted works of authorship-

(A) in conjunction with automatic systems . . .

by various forms of machine reproduction . . . (B)

(2) the creation of new works by the application or intervention of such automatic systems or machine reproduction.

Therefore, even if the proposed revision bills do become the new copyright law, there is still a possibility that the scope of coverage will be extended to the aspect of computer programs presently unprotected by the bills. Unfortunately, this commission will last only three years, at the end of which it will make a final report containing recommendations for changes in the law and procedures. It would be better if the proposed revision bills established a permanent advisory board to carry on a continuing review of law and procedures.

UNCOPYRIGHTABILITY

Although no cases have been decided on the copyrightability of computer programs, Gottschalk v. Benson²² addressed the patentability of computer software. Copyrightability was

²¹a. Pub. L. No. 93-573, tit. II (Dec. 31, 1974), 22. 409 U.S. 63 (1972).

discussed in some of the amici curiae briefs, but the Supreme Court did not rule on the issue. Two inventors sought a patent on a program for converting binary coded decimal (BCD) numerals into pure binary numerals in a general purpose digital computer. The Court found that computer software was a process and left to Congress the decision as to what software should be patentable. However, the particular program in the case was considered not patentable because it was so abstract and sweeping as to constitute a mere idea. The practical effect of granting a patent would have been to pre-empt the algorithm used in the computer program. Thus, this judicial decision, when read in conjunction with any new statute with provisions similar to those of S. 22 and H.R. 2223, seems to foreshadow a judicial determination that most computer programs are uncopyrightable because they are mere ideas.

Regardless of the 1964 ruling of the Copyright Office, it appears that the arguments against the copyrightability of most computer software under the revision bills, if adopted, will be persuasive in the courts. There are two major legal arguments made against the copyrightability of computer software of a functional nature: first, such a program is not the "writing of an author"; and second, it is a machine part which cannot be copyrighted.

A program is not a "work of authorship."28

A program is not the writing of an author. It contains no literary expression, not even "a modicum of creative work."24 Though a program looks like a compilation of numbers and words, these numbers and words merely identify electrical "switches" in the computer and the machine operations to be performed by it. A functional program has but one essential purpose: to be placed in a computer and to control its operation. The programmer who writes it is in the nature of a technician who is not concerned with authorship, but rather with a machine process to be carried out by the computer.

A machine part cannot be copyrighted.²⁵

The current Copyright Act does not differentiate between pure aesthetic works of art and useful works of art. Thus, it

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^{23.} Hearings on S. 597 Before the Subcomm. on Patents, Trademarks, and Copyrights of the House Comm. on the Judiciary, 90th Cong., 1st Sess., at 775 (1967).

^{24.} Amsterdam v. Triangle Publications, Inc., 189 F.2d 104, 106 (3d Cir. 1951). 25. Banzhaf, Copyright Protection for Computer Programs, 14 Copy-

RIGHT L. SYMPOSIUM 118, 137-39 (1966).

appears that "an object would be copyrightable if it were in a recognized artistic medium of expression, regardless of artistic merit. or if in a nonartistic medium, only if it displayed artistic merit."26 Since a functional computer program is in a nonartistic medium and does not display artistic merit, the argument of utility would be persuasive against sustaining copyrights on such computer programs.

There are two cases that appear to hold that an article which is a necessary part of a machine cannot be copyrighted. In the first case,²⁷ plaintiff manufactured a recording thermometer composed of a clock, a thermometer, and a writing machine which graphed a record on a dial-like paper chart. Plaintiff had obtained a copyright upon the chart. Thereafter, defendant made and sold paper charts admittedly copied from plaintiff. Plaintiff sued for copyright infringement, and defendant asserted the invalidity of the copyright on the ground that the paper chart was an indispensable element of the mechanical device. The court agreed, concluding that the paper chart was not the writing of an author.

In the second case,²⁸ the Register of Copyrights rejected an application to register a graphic paper chart for a copyright. The paper chart manufacturer thereafter brought a declaratory judgment suit against the Register of Copyrights. The court concluded that the charts were not copyrightable because they were not writings capable of conveying the thought of an author. The court added:

Since the machines which cooperate with the charts in suit are useless without them, to copyright the charts would in effect continue appellant's monopoly of its machines beyond the times authorized by the patent law.29

Some parallels can be shown between these two similar cases and the present efforts to copyright functional computer programs. Firms that have secured copyright protection on computer programs have in general held patents protecting the computer. More importantly, the computer which cooperates with the program is useless without it. Thus, the program is an indispensible element of the computer. The program controls the computer and provides information necessary to solve problems. Only here does the analogy between computer programs and the paper temperature charts break down in that

^{26.} Banzhaf, supra note 25, at 136. 27. Taylor Instrument Co. v. Fawley-Brost Co., 139 F.2d 98 (7th Cir. 1943), cert. denied, 321 U.S. 785 (1943).

^{28.} Brown Instrument Co. v. Warner, 161 F.2d 910 (D.C. Cir. 1947), cert. denied, 332 U.S. 801 (1947).

^{29.} Id. at 911.

the charts did not control the temperature-recording machines. Thus, it appears that these two cases indicate a second bar to obtaining copyright protection for functional computer programs under the revision bills.

UNDESIRABILITY OF COPYRIGHT PROTECTION³⁰

The present criteria for copyright protection are creativity³¹ and originality.³² Copyright protection is not adequate for developments involving digital computers when the contribution to the art rises well above these low standards of copyrightability. When compared to other forms of protection, such as patents and trade secrets, afforded to computer programs, especially those programs of a functional nature, the copyright law is undesirable from the program owner's standpoint for several reasons.

First, the revision bills require that an infringer actually copy another's copyrighted work. Should a programmer develop a program on his own without access to the copyrighted program, he need not concern himself with infringement. The only act that will infringe a copyright is a substantial taking of the thing copyrighted. The Supreme Court has emphasized³³ that some actual appropriation of language is necessary for infringement to exist.

Second, the revision bills would not protect the concept which may have been used in the preparation of the program. It is not the contribution that is copyrighted; only the particular, narrow expression or form of that contribution as registered in the Copyright Office is protected. Therefore, the contribution itself would go into the public domain for free use by everyone. Only the effort and time spent in creating the particular set of instructions comprising the program would be protected by copyright.

Third, section 102 of the revision bills creates a doubt that the courts would uphold the copyrightability of a computer program when the expression of the program is a deck of punched cards or a magnetic tape. It may well result that copying directly from either of these media would not be an infringement of a copyright. The courts might decide that the

^{30.} Brief for American Patent Law Ass'n as Amicus Curiae at 24-26, Gottschalk v. Benson, 409 U.S. 63 (1972); Brief for Burroughs Corp. as Amicus Curiae at 22-23, Gottschalk v. Benson, 409 U.S. 63 (1972); Brief for IBM Corp. as Amicus Curiae at 30-31, Gottschalk v. Benson, 409 U.S. 63 (1972).

Baker v. Selden, 101 U.S. 99 (1880).
 Burrows-Giles Lithographic Co. v. Sarony, 111 U.S. 53 (1884).
 Baker v. Selden, 101 U.S. 99 (1880).

only properly copyrightable subject matter is a list of instructions printed out so as to be understandable to a human being. Someone then would be able to read the list of printed out instructions at the Copyright Office to get a general idea of the program, and then leave either to encode it onto magnetic tape or to punch a deck of cards to implement the corresponding machine code. Such action would not infringe the copyright if there is no substantial taking of the expressed form of the computer program, even if there is a total taking of the concept behind the program.

Thus, in the absence of a single decided case respecting computer program copyright, a number of unresolved legal issues hang as a foreboding cloud over copyright protection for programs. Therefore, there is doubtful support for the assertion that copyright protection, as contrasted with copyright registration, is presently available for computer programs.

ALTERNATIVE PROTECTION

Patents

General revision of the 1952 Patent Act has been under consideration by Congress since the Report of the President's Commission on the Patent System was issued in 1966.³⁴ The report recommended against the patentability of computer programs. However, it did not assert that the present statute precludes patentability. In the brief discussion of computer programs, the report stated that uncertainty exists whether such programs are now patentable. Also, the report did not purport to make a full analysis of existing law. The Commission was composed generally of high governmental officials and prominent private citizens, including an executive of IBM Corporation,³⁵ the leading hardware manufacturer. The independent software industry was not represented on the Commission. Since the issuance of the report, numerous patent revision bills³⁶ have been introduced into Congress, but all have been unsuccessful.

In 1966, prior to this Congressional action, the Patent Office gave public notice in its Official Gazette of its intention to issue

S. Doc. No. 5, 90th Cong., 1st Sess. 12-13 (1967).
 James W. Birkenstock, Vice President of Commercial Development.

<sup>ment.
36. H.R. 7111, H.R. 11868, 93d Cong., 1st Sess. (1973); S. 1321, S. 2504,
S. 2930, 93d Cong., 1st Sess. (1973); H.R. 4012, 92d Cong., 1st Sess. (1971);
S. 643, 92d Cong., 1st Sess. (1971); S. 2756, 91st Cong., 2d Sess. (1970);
H.R. 12280, 91st Cong., 1st Sess. (1969); S. 1246, S. 1469, 91st Cong., 1st
Sess. (1969); S. 3892, 90th Cong., 2d Sess. (1968); H.R. 5924, H.R. 7454,
H.R. 10006, H.R. 11447, 90th Cong., 1st Sess. (1967); S. 1042, S. 1691, S.
2164, S. 2597, 90th Cong., 1st Sess. (1967).</sup>

guidelines for the examination of patent applications.³⁷ A public hearing was held, and two years later, after consideration of other comments and suggestions submitted in response to the public notice, guidelines³⁸ were published. The Patent Office had decided that computer software, whether defined as a machine or a process, was not patentable.

One month later, the Court of Customs and Patent Appeals (C.C.P.A.) decided In re Prater & Wei I.³⁹ The applicants made both machine and process claims directed to a new and different operation of a computer, whether analog or digital. The Patent Office had recognized that Prater and Wei were entitled to patent coverage by their machine claim on the analog embodiment of their system. However, all claims were rejected because they also embraced a programmed general purpose digital computer. The rejection of both the machine and the process claims was reversed, but the court granted⁴⁰ the Patent Office's petition for rehearing.

On rehearing,⁴¹ the court affirmed the grant of the patent on the machine claim but modified its earlier decision by upholding the Patent Office's rejection of all of the process claims for lack of specification.42

Although Prater and Wei's process claims were turned down, the court added that process claims on computer software were patentable under the proper circumstances. The court said:

No reason is now apparent to us why . . . process claims broad enough to encompass the operation of a programmed generalpurpose digital computer are necessarily unpatentable. . . . [O]nce a program has been introduced, the general-purpose digital computer becomes a special purpose digital computer . . . which, along with the process by which it operates, may be

 42. 35 U.S.C. § 112 (1970) provides: The specification shall contain a written description of the invenin the specification shall contain a written description of the inventerior, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention. The specification shall conclude with one or more claims partice automation of the inventor of the subject matter which it is a set of the subject matter which i

ularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. . . An element in a claim for a combination may be expressed as

a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specifications and equivalents thereof.

^{37. 829} O.G. Pat. Off. 865 (1966).
38. Examination of Patent Applications on Computer Programs, 33
Fed. Reg. 15609 (1968).
39. 415 F.2d 1378 (C.C.P.A. 1968).
40. 160 U.S.P.Q. 230 (C.C.P.A 1969).
41. In re Prater & Wei II, 415 F.2d 1393 (C.C.P.A. 1969).
42. 35 U.S.C. & 112 (1970) provides:

patented subject, of course, to the requirements of novelty, utility, and non-obviousness.43

Two months after In re Prater & Wei II was decided, the Patent Office rescinded⁴⁴ its guidelines and announced that it would follow the court's decision on a case-by-case basis.

Subsequently, in five cases involving computer software, inventors appealed rejections of their process claims by the Patent Office. Four⁴⁵ obtained reversals and were granted patents. One⁴⁶ was rejected for lack of specification.

Then along came Benson and Tabbot with a simple computer program for converting electrical signals in binary coded decimal (BCD) notation into ordinary binary notation. The Patent Office rejected their process claim as a purely mental process and therefore nonstatutory subject matter. The Court of Customs and Patent Appeals reversed⁴⁷ on the ground that this computer program embodied a patentable process claim on a machine which had been disclosed in the patent application. The Patent Office petitioned for certiorari to the Supreme Court.

In the meantime, the C.C.P.A. reversed the Patent Office in two⁴⁸ more cases but upheld it in another case⁴⁹ on the ground of lack of specification.

Certiorari was granted⁵⁰ and arguments were presented to a bare quorum of six justices, three⁵¹ others having disqualified themselves. The Supreme Court, per Justice Douglas, unanimously reversed⁵² the C.C.P.A. It found that the process claim was for all practical purposes a mere idea, not a patentable process,⁵³ and therefore nonstatutory subject matter. Although the Court held this process claim defective, it did not close the door on all process patents for computer software. The Court added:

It is said that the decision precludes a patent for any program servicing a computer. We do not so hold.54

51. Stewart, Blackmun, & Powell, J.J.
52. Gottschalk v. Benson, 409 U.S. 63 (1972).
53. 35 U.S.C. § 100 (b) (1970) provides: "The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." 54. Gottschalk v. Benson, 409 U.S. 63, 71 (1972).

^{43. 415} F.2d 1393, 1403 & n.29 (C.C.P.A. 1969).

^{43. 415} F.2d 1393, 1403 & n.29 (C.C.P.A. 1969).
44. Notice of Rescission of Guidelines, 34 Fed. Reg. 15724 (1969).
45. In re Foster, 438 F.2d 1011 (C.C.P.A. 1971); In re Musgrave, 431
F.2d 882 (D.C.P.A. 1970); In re Mahony. 421 F.2d 742 (C.C.P.A. 1970);
In re Bernhart, 417 F.2d 1395 (C.C.P.A. 1969).
46. In re Hammack, 427 F.2d 1384 (C.C.P.A. 1970).
47. In re Benson, 441 F.2d 682 (C.C.P.A. 1971).
48. In re Waldbaum, 457 F.2d 997 (C.C.P.A. 1972); In re McIlroy, 442
F.2d 1397 (C.C.P.A. 1971).
49. In re Ghiron, 442 F.2d 985 (C.C.P.A. 1971).
50. 405 U.S. 915 (1972).
51. Stewart Blackmun, & Powell J.J.

Instead, the Court decided to exercise judicial restraint and to defer to Congressional judgment. The Court said:

It may be that the patent laws should be extended to cover these programs, a policy matter to which we are not competent to speak.

If these programs are to be patentable, considerable problems are raised which only committees of Congress can manage 55

Patents continue to be granted on computer programs in the appropriate class.⁵⁶ Nevertheless, the practical effect of this decision has been to create a merry-go-round situation. Developers submit software under process claims for patent protection; the Patent Office denies some patents by citing Gottschalk v. Benson; and the C.C.P.A. reverses and orders patents granted by citing the In re Prater & Wei II line of cases. This situation will continue until Congress acts.

There are a number of considerable problems which Congress must face when, or if, it decides to act. These problems will be mentioned only summarily in conjunction with their effect on the competing interests of the opposing hardware and software industries involved in any determination of the patentability of computer software.

There are two adverse effects of patentability on the hardware industry. First,57 patentability will present practical impediments to all users of computers. It is well established that a patent may be infringed without knowledge of the patent or without intent to infringe. The existence of patent monopolies on computer applications software may impede effective development and utilization of computers. Often the owner of a computer does not know what programs the user is employing, and frequently the user will neither be fully acquainted with nor

ing a programmed reprogrammable computer, and includes: (1) 'software' systems that regulate or direct the internal activities of a general purpose computer;

(2) applications programming systems (reprogrammable systems) designed to enable a general purpose computer to

(3) combinations including a data processing system having a programmed reprogrammable computer . . .;

(4) systems, procedures, programm or routines incident to or included within the programming field . . .
57. Brief for Business Equip. Mfrs. Ass'n as Amicus Curiae at 9-16, Gottschalk v. Benson, 409 U.S. 63 (1972).

. . . .

^{55.} Id. at 72-73. 56. U.S. PATENT OFFICE, CLASSIFICATION DEFINITIONS 441-1 (October 1971) provides:

Class 444, Programmed Data Processors, Data Processing Methods and Procedures

I. General Statement of the Class Subject Matter

A. This is the residual class for data processing systems includ-

even concerned about the structure of the computer. Thus, it is probable that neither user nor owner will even make a rightto-use search to determine whether existing computer applications software patents might be infringed.

Second.⁵⁸ acceptance of the fact that software is a machine process will lead to the conclusion that the bundling of free software and priced hardware constitutes an antitrust violation⁵⁹ as an illegal tie-in arrangement. This is not a new approach. In a 1935 perpetual tie-in injunction,⁶⁰ IBM is forbidden to lease tabulating machines with a covenant in the lease for exclusive sale of punch cards. Today, software is given away free in order to sell the priced hardware.

A 1956 injunction updating the 1935 injunction prohibits tiein of the different parts of an overall computer system. However, the Antitrust Division of the Justice Department refuses to enforce the injunction against software bundling. It is argued that software is not a machine device but a mental process. The practical result of this nonenforcement policy is the closing of the IBM software market to the software developers.

Opposing the government position, several smaller competing firms, e.g., Telex and Control Data, have instituted private antitrust lawsuits against IBM on the ground that the tying of software, whether patented or unpatented, to patented hardware is illegal. Even if IBM ultimately prevails, mere acceptance alone by the courts and the Patent Office of the proposition that software is a machine device which is patentable subject matter will make it possible for the software developers to obtain patents which will help curb the software bundling practice of the hardware manufacturers.

There are three adverse effects of unpatentability on the software industry. First, software developers are forced to seek protection under the state trade secret laws.⁶¹

60. United States v. IBM Corp., 298 U.S. 131 (1935).
61. See text accompanying notes 64-66 infra.

^{58.} Brief for ADAPSO/AISC as Amicus Curiae at 21-25, Gottschalk v. Benson, 409 U.S. 63 (1972).

^{59.} Clayton Antitrust Act § 3, 15 U.S.C. § 14 (1970) provides:

It shall be unlawful for any person engaged in commerce, in the course of such commerce, to lease or make a sale or contract for sale of goods, wares, merchandise, machinery, supplies, or other commodities, whether patented or unpatented, for use, consumption, or resale within the United States . . . or fix a price charged therefor, or diswithin the United States . . . or fix a price charged therefor, or dis-count from, or rebate upon, such price, on the condition, agreement, or understanding that the lessee or purchaser thereof shall not use or deal in the goods, wares, merchandise, machinery, supplies, or other commodities of a competitor or competitors of the lessor or seller, where the effect of such lease, sale, or contract for sale or such condition, agreement, or understanding may be to substantially lessen competition or tend to create a monopoly in any line of com-merce merce.

Second,⁶² unpatentability affects university research. Α university researcher is in a position similar to a medical researcher or a legal scholar. He must publish the results of his research to promote further investigation and to achieve recognition in his field. Because the patent system is unavailable, these publications deprive the researcher, as well as the university, of a just reward for public benefits resulting from his work.

Third,⁶³ unpatentability diminishes the staying power of minority groups in the software industry. The software industry is of special interest to those of minority racial and ethnic groups because relatively low capital is required to enter the market. Intellectual capabilities and know-how are the only needed credentials. Staying power may be greatly enhanced by the availability of patent protection.

Protection is especially important where the characteristics of the property are easily duplicated in immediately usable form, as is the case with software. Thus, the right to patent protection for software is considered to be of great importance in providing the incentive and shield necessary for small businessmen, whether of minority racial and ethnic groups or otherwise, to successfully compete in the industry.

Trade Secrets⁶⁴

Because of the uncertain state of copyright registration and the difficulty of obtaining patent protection for computer programming, many of the best programs are being held as trade secrets. Because general rules of uncopyrightability and unpatentability are now being imposed and because such rules may be legislated by Congress, secrecy for all computer programs will continue to be the rule rather than an exception. The erection of secrecy barriers around computer programs is not in the public interest since it retards advancement in programming technology by depriving others of existing knowledge and by necessitating duplication of effort to acquire such knowledge.

Traditionally, copyright and patent protection has been an incentive for disclosure and a means for stimulating the investment of risk capital into new writings and discoveries. If patent protection, as contrasted with copyright registration, is made available for computer software under the same standards

^{62.} Brief for Iowa State University Research Foundation, Inc., as Amicus Curiae at 11-13, Gottschalk v. Benson, 409 U.S. 63 (1972). 63. Brief for Computer Software Analysts, Inc., and Computerized Lists Corp. as Amicus Curiae at 6-7, Gottschalk v. Benson, 409 U.S. 63

^{(1972).} 64. See generally Brief for Whitlow Computer Systems, Inc., as 64. See generally Cottachalk v Benson, 409 U.S. 63 (1972). Amicus Curiae at 9-12, Gottschalk v. Benson, 409 U.S. 63 (1972).

that it is presently available for other inventions, full disclosure of programs would be the rule because the conceptual contribution as well as the particular instructions would be protected.

Admittedly, the right of the public to use certain programs found to be novel, useful, and nonobvious could be restricted. On the other side of the fence, the right of the owner to restrict the use of computer software could be limited to commercial applications for profit. The owner's right to restrict would not cover experimental use since experimental use of a patented invention is not infringement.⁶⁵ Also, such a right would not cover a fair use since fair use of a copyrighted work is not infringement.⁶⁶ Such a right to restrict does not exist for a trade secret unless the use of the trade secret was obtained by improper means.

Moreover, the right to obtain patent royalties on the commercial use of a patented computer program will provide the same incentive for investment in research and development in the programming field as is presently provided by the limited disclosure of trade secrets in exchange for royalties.

However, further research and development, except as limited by the proscription against use without a license, will not be restricted by copyrighting or patenting and will be aided by the disclosures made possible through copyrighting and patenting. Such a stimulus is not provided by the maintenance of trade secrets which necessarily rely on nondisclosure for their value. Albeit, state law leaves one free to develop the subject matter of the trade secret independently, without fear of an infringement suit.

Thus, it appears that copyrights and patents would be preferable forms of protection over trade secrets from the public interest standpoint. However, because of the uncertainty of the extent of such protection for computer programs, the software industry has sought copyright and patent protection for relatively few programs. Most are kept as trade secrets. This is an unfortunate state of affairs for the public. However, because of the present meager protection afforded by the existing federal statutes, it is understandable why state trade secret protection is considered the most practical course to take by the programming industry. This decision is only common sense.

CONCLUSION

If the issue ever reaches a court of law, it is more likely

^{65.} Dugan v. Lear, Inc., 156 F.2d 29 (2d Cir. 1946). 66. Sheldon v. Metro-Goldwyn Pictures Corp., 81 F.2d 29 (2d Cir. 1936).

than not that most computer programs will be found uncopyrightable under the revision bills, if adopted. There are two main reasons for this conclusion: first, a program is not the "writing of an author"; second, a program, being a machine part, cannot be copyrighted.

Congress is presently considering making a substantial revision of the copyright law. Numerous bills have already been considered since the first revision bill was introduced in 1967. However, it appears that the enactment of a new Title 17 substantially identical to S. 22 and H.R. 2223, the first comprehensive copyright revision bills since 1909, is finally proceeding apace. S. 22 was referred to the Senate Committee on the Judiciary on January 15, 1975. It is anticipated that extensive hearings will be held before the House and Senate Committees on the Judiciary in 1975.

The cautious attitude on the part of Congress since 1967 has been the result of the complexity of the problem—one of a very technical nature requiring the resolution of public policy questions, involving substantial opposing interests. This is the reason why the problem will be studied by a national study commission with no changes in the law contemplated until after the commission issues its report.

The copyright protection presently afforded is clearly inadequate for computer programs. The revision bills do not help matters at all. The Copyright Office is presently registering program copyrights under a rule of doubt. If such copyrights are found valid by the courts, the protection would extend merely to the form of the program and not to the essence of it. The ease of copying and the difficulty of discovery are additional factors strongly militating against limiting computer programs to copyright registration. Thus, the programming industry considers copyrighting an undesirable answer in their quest for adequate protection of their computer programs.

Patenting is the most desirable answer, but as the Patent Act is presently construed and as the patent revision bills are presently drafted, such protection would be limited to the few computer programs that rise to the level of nonobviousness. Maintenance of trade secrets is presently the answer to this problem for the software industry. However, continuance of such a policy is not in the public interest. Clearly, something must be done.

Recommendation

Any recommendation that will be adopted by Congress must balance the public interest against the needs of the pro-

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gramming industry. Thus, if and when Congress does decide to act, a better solution than that proposed in the revision bills may be to establish a new kind of protection, the petty patent, for a shorter period than the present patent term of 17 years, e.g., 5, 8½ or 10 years. Other forms of writings and discoveries besides applications software might also qualify for protection under this new umbrella as long as they meet the criteria for qualification.

The present criteria for copyright protection are creativity⁶⁷ and originality.⁶⁸ The present criteria for patent protection are utility,⁶⁹ novelty,⁷⁰ and nonobviousness.⁷¹ The criteria for a petty patent could be originality, novelty, and utility. Full disclosure would be required for the same extent of patent protection presently available, but the protection would last for a shorter length of time.

Although the practical problems of enforcement of the protection afforded would be the same for the petty patent as for the existing patent protection, these recommendations are directed solely toward the creation of a right to protection. With such a right available it is anticipated that in a sophisticated industry the member companies would obtain a license to the software rather than infringe the petty patent. In addition, under certain circumstances, a computer controlled manufacturing process would be identifiable through examination of the character of manufacture and the final product. Therefore, the

67. Baker v. Selden, 101 U.S. 99 (1880).
68. Burrows-Giles Lithographic Co. v. Sarony, 111 U.S. 53 (1884).
69. Utility is required by 35 U.S.C. § 101 (1970) which provides: Whoever invents or discovers any new and useful process, mawhoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title (emphasis added).
70. Novelty is required by 35 U.S.C. § 102 (1970) which provides:

A person shall be entitled to a patent unless—
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(e) the invention was described in a patent granted on an ap-plication for patent by another filed in the United States before the invention thereof by the applicant for patent, or

(g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed,

71. Nonobviousness is required by 35 U.S.C. § 103 (1970) which provides:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains ... (emphasis added).

problem of infringement discovery could be minimized. The petty patent would give the software manufacturers a right to protection for their programs to which the Patent Office and courts would probably be receptive.

The present remedy for both copyright and patent infringement is an injunction for the remainder of the term of the infringed copyright or patent and money damages in the form of all past profits made by the infringer. The remedy for infringement of a petty patent could be an injunction either in the discretion of the court or only where direct copying has occurred. Money damages could be awarded under all circumstances or only where the latter finding is made.

Thus, such a statutory scheme would serve as a bridge between copyrights and patents. A petty patent classification would be a square hole for the square peg of a computer program that presently does not fit into the round holes of either copyright or patent.

Such a middle ground of protection would not be new. Between patents and industrial designs, both the Germans⁷² and the Japanese⁷³ have a utility model classification. The category covers original and novel subject matter which has practical utility but which does not satisfy the high standards of patentability. In Japan the extent of protection is the same as for a patent, but the term is only three-fourths as long.⁷⁴

This scheme should seriously diminish any arguments that the advance of the hardware technology will be critically impeded for any substantial length of time. The probable result will be that the hardware manufacturers will begin to actively compete with the software developers in order to avoid any possible infringement litigation involving their own hardware. Thus, competition will be increased with the public as the ultimate beneficiary.

72. Law of Jan. 2, 1968, [1968] BGBl. I 24. See 5 MARTINDALE-HUB-BELL LAW DIRECTORY, GERMANY LAW DIGEST, PATENTS 3325, 3338-39 (1974).

73. See 5 MARTINDALE-HUBBELL LAW DIRECTORY, JAPAN LAW DIGEST, PATENTS 3463, 3474 (1974).

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