12-1-1974

Protection of Computer Programs: Resurrection of the Standard

John J. McHugh

PROTECTION OF COMPUTER PROGRAMS: RESURRECTION OF THE STANDARD

I. Introduction

By constitutional mandate, Congress is authorized

> 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 discoveries.[1]

Even though this directive has been statutorily implemented,[2] and that statute often amended,[3] the constitutional purpose has yet to be fully satisfied. Thus far, the thrust of Article 1, section 8, clause 8 has been hampered by patent laws that are antiquated in focus,[4] haphazard in application,[5] and ineffective in protection.[6] These deficiencies are obvious in respect to that most modern "useful art," the computer program.

This note will examine the modes of protection available for the computer program and inquire why, in light of the above statutes, resort must be had to a common law tort remedy: the "trade secrets" doctrine.[7] In that regard, the continued vitality of patent protection will be evaluated. A conclusion will follow that patent protection, if it is to exist at all, must ultimately derive from the courts, not the legislature.

II. Protection of Computer Programs

A. *Generally*

Any successful scheme for the promotion of technical progress must be predicated upon protection of the invention within a competitive structure. It should provide the inventor the recovery of his investment and enable him to secure a reward for his genius.[8] On a larger scale, it must foster the influx of speculative capital into the marketplace,[9] without which progress is piecemeal at best. Concomitantly, the protective scheme must not be so severe that reasonable competition is thwarted. This is especially so in the computer industry.

---

1   U.S. CONST. art. I, § 8, cl. 8.
2   35 U.S.C. § 1 *et seq.* (1970).
3   For a detailed account of the legislative history of Title 35, *see* Federico, *Commentary on the New Patent Act,* 35 U.S.C.A. 1-70 (1954).
4   *See* 119 CONG. REC. 2865 (daily ed. April 17, 1973) '(remarks of Rep. Owens).
5   *Id.*
6   Fully 72 percent of the patents litigated in the Federal courts of appeals are held invalid, and fewer than 20 percent of the litigated patents are upheld as valid and infringed. . . . Such a high rate of invalidity means that many more patents issue than are warranted. Simply put, this means that the Patent Office has not been doing its job of weeding out bad and unjustified patents. *Id.* at 2866.
7   Bender, *Trade Secret Protection of Software,* 38 GEO. WASH. L. REV. 909 (1970) [hereinafter cited as Bender, *Trade Secrets*].
8   Bender, *Computer Programs: Should They Be Patentable?* 68 COLUM. L. REV. 241, 244 n.19 (1968) [hereinafter cited as Bender, *Patents*].
9   *Id.* at 245 n.21.

Indeed, if "some of the biggest progress in the future will come from a thorough understanding of software,"[10] the hardware[11] manufacturers who market computer programs must be confronted with a strong software industry.[12] However, programming is a very expensive science[13] and protection must be afforded to make the investment worthwhile. The types of protection available are: patent, copyright, and trade secret protection.

B. *Patent Protection*

Among the available alternatives, the patent offers the most comprehensive protection. It gives to the holder the exclusive right to make, use, or sell his invention.[14] In effect, upon the grant of a patent, the holder obtains a seventeen-year monopoly[15] over his invention, even as against one who independently develops it.[16] The crucial benefit which the patent confers on the computer programmer is the certainty that any unauthorized use of the program will constitute a patent infringement for which an adequate remedy can be secured.[17] When a patent is obtained, there is no need to ascertain whether there was a "copying," as would be necessary under a copyright,[18] or an "unethical acquisition," essential to a trade secret violation.[19] The mere use of the patented program, without more, would be sufficient.

Since it is the program which is the "intellectual heart of computer operation,"[20] tremendous economic leverage would thus be available to the computer programmer who obtained patent protection on a significant software innovation. This explains, in large part, the clamor by computer programmers to secure patent protection and the equally clamorous outcry by hardware manufacturers against it during the last decade.[21] This controversy grew more intense with

---

10 *Id.* at 244 n.18.
11 Hardware and software are terms of the trade used to designate the manufacturer and his respective product. Hardware is the physical machine with its circuits, memory units, calculating devices, and switches. Hardware manufacturers include, among others, IBM and Honeywell. The software is the computer porgram, a set of operating instructions which the harware uses in its processing of data. The software producers are those who market the programs alone, independent of any equipment. They include the Association of Data Processing Service Organizations, Applied Data Research, Inc., and Computer Software Analysts, Inc. IBM, since 1971, has been marketing its hardware and software separately, a process known as "unbundling," which was supposed to make the software market more competitive. However, much of the controversy generated by the patentability of programs issue has been the result of infighting between these two forces.
12 Bender, *Patents* at 245.
13 *Id.*
14 35 U.S.C. § 271 (1970).
15 35 U.S.C. § 154 (1970).
16 This rule is the greatest asset of patent protection. 35 U.S.C. § 102(b)(1970) provides that a patent shall issue unless the invention was patented in this or a foreign country. Once the inventor has secured the patent, he has the right to exclude all others from its manufacture, use, or sale under § 271. This is the concept of "first inventorship." *See* 60 AM. JUR. 2d *Patents* §§ 15-21 (1972).
17 35 U.S.C. § 281 '(1970).
18 2 M. NIMMER, COPYRIGHT § 141 (1963, Supp. 1974).
19 *See* 55 AM. JUR. 2d *Monopolies, Restraints of Trade, and Unfair Trade Practices* § 704 (1972).
20 Katona, *Legal Protection of Computer Programs*, 47 J. PAT. OFF. SOC'Y 955, 956 (1965).
21 *See* Bender, *Patents* at 241 n.5. Since 1968, the arguments have focused more on the decisions of the Court of Customs and Patent Appeals, but the issue has become none the less

the Report of the President's Commission on the Patent System[22] which recom-
mended against the grant of patents on computer programs.[23] The Patent Office,
consistent with its own interpretation, issued guidelines concerning the exami-
nation of patent applications on computer programs, which provided that com-
puter programming, whether defined in the mode of process or apparatus, would
not be patentable.[24] Those guideliness were rejected, however, by the United
States Court of Customs and Patent Appeals [hereinafter CCPA] in *Application
of Prater*,[25] which marked the beginning to the CCPA trend in favor of granting
patents to computer programs.

Application of Prater, which involved an invention for the processing and
analysis of spectrographic data through the use of a programmed digital com-
puter, initiated the new trend. The Patent Office Board of Appeals,[26] after a
denial of the claim by the hearing examiner, predicated its rejection on 35
U.S.C. § 101:[27]

> [T]he claim sets forth nothing which could not be performed purely as a
> *mental* exercise using [Prater's] discovery . . . the claim did not therefore
> fall within the statutory category of "process," as interpreted by court
> decisions.[28]

controversial. *See, e.g.*, Brothers and Grimaldi, *Comment/In re Prater and Patent Reform
Proposals: "Debugging" the Patent Office's Administration of Computer Program Applications*,
51 J. PAT. OFF. SOC'Y 581 (1969); Woodcock, *Mental Steps and Computer Programs*, 52 J.
PAT. OFF. SOC'Y 275 (1970); Sutton, *The "Mental Steps" Doctrine: A Critical Analysis in
Light of Prater and Wei*, 13 IDEA 458 (1969); Iandiorio, *Which Wei Did They Go?* 53 J. PAT.
OFF. SOC'Y 712 (1971); Koller and Moshman, *Patent Protection for Computer Software:
Implications for the Industry*, 12 IDEA 1109 (1968); Koller, *Computer Software Protection:
Report of an Institute Clinic*, 13 IDEA 351 (1969); Nimtz, *The Patentability of Computer
Programs*, 1970 RUTGERS J. COMPUTERS & LAW 38; Edwards, *Technological Progress &
Patent Law*, 15 IDEA CONF. No. 19 (1972); Note, *Process Patents for Computer Programs*, 56
CALIF. L. REV. 466 (1968).
  22 Established by Exec. Order No. 11215, 3 C.F.R. 123 (Supp. 1965).
  23 The Report was released on December 8, 1966. In § IV, the Report recommended
that programs for data processing machines not be considered patentable, regardless of how
they were claimed. Report at 12. *See* Bender, *Patents* at 241 n.5.
  24 "The basic principle to be applied is that computer programming per se, whether
defined in the form of process or apparatus, shall not be patentable." PATENT OFFICE: EX-
AMINATION OF PATENT APPLICATIONS ON COMPUTER PROGRAMS, NOTICE OF ISSUANCE OF
GUIDELINES, 33 Fed. Reg. 15609 (1968). After the Court of Customs and Patent Appeals
refused to adhere to these guidelines in *Application of Prater*, 415 F.2d 1378 (C.C.P.A. 1969),
the Patent Office rescinded the guidelines. 34 Fed. Reg. 15724 (1969).
  25 415 F.2d 1378 (C.C.P.A. 1969), *aff'd in part and rev'd in part on rehearing*, 415 F.2d
1393 (C.C.P.A. 1969).
  26 The procedure to be followed for the application for a patent is specified in 35 U.S.C.
§§ 111-146 (1970). The claimant files his application with the Commissioner of Patents, who
then has the application inspected by a hearing examiner. The claim can be submitted and
rejected several times until it is refined to the absolute level of novelty. If it has been rejected
and the applicant does not prosecute his claim within six months, it is considered to be
abandoned. After the application has been twice rejected, the claimant can press forward to
the Board of Appeals. Then, if that board fails to sustain him, he can choose to appeal to
the Court of Customs and Patent Appeals. In the alternative, he may maintain a civil suit
against the Commissioner in the United States District Court of the District of Columbia,
and if the claimant prevails, the Commissioner is instructed to issue a patent.
  27 35 U.S.C. § 101 (1970) provides:
        Whoever 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.
This section must be read in conjunction with 35 U.S.C. § 100(b)(1970) which 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.
  28 415 F.2d at 1382.

The court carefully distinguished its precedents, noting[29] that in *Application of Abrams*,[30] decided eighteen years before *Prater*, the process sought to be patented could be performed only in the mind while in *Prater* there was a full disclosure of an apparatus for implementing the process without requiring any steps to be performed in the mind. While in its rehearing of the case, the CCPA placed substantial importance on the disclosure of an apparatus,[31] it did not alter its holding that a

> process disclosed as being a sequence or combination of steps capable of performance without human intervention and directed to an industrial technology—a "useful art" within the intendment of the Constitution—is not precluded [from patent protection] by the mere fact that the process could alternatively be carried out by mental steps.[32]

Having sidestepped the "mental steps" obstacle, the CCPA was ready to deal with subsequent computer program questions in terms of "progress in technology" rather than in "alternative methods of achievement."

In *Application of Bernhart*,[33] the CCPA next decided the patentability of a method and apparatus for converting a three-dimensional object into a two-dimensional portrayal by means of a mathematical formula. While the court noted the congressional intent to exclude laws of mathematics from patentability,[34] it argued that all machines function according to some physical law which, if known, could be mathematically expressed.[35] Consistent with a finding that a machine is patentable subject matter,[36] as well as the statutory dictate that the manner of invention should not negative the status of patentability,[37] the CCPA reasoned that it could not deny patents to machines merely because their novelty was explainable in terms of mathematics.[38] The CCPA also suggested that the use of a computer program in a machine, if it did not constitute creation of a new machine, at least amounted to a new use of a known machine, which qualified as a patentable process under 35 U.S.C. §§ 100(b), 101.[39]

Ultimately, the CCPA substituted a new doctrine in lieu of the "mental steps" concept in *Application of Musgrave*.[40] There the issue involved a claim for a process patent on a mathematical method which would delineate the nature of subsurface formations in the earth's crust. Continuing its previous stance, the Patent Office Board of Appeals rejected the claim as one predicated on a mental process and thus predicated on nonstatutory subject matter.[41] On subsequent appeal to the CCPA, that court proclaimed a new standard:

---

29   *Id.* at 1385.
30   188 F.2d 165 (C.C.P.A. 1951).
31   415 F.2d at 1403, 1405.
32   *Id.* at 1389.
33   417 F.2d 1395 (C.C.P.A. 1969).
34   *Id.* at 1399.
35   *Id.*
36   *See* 35 U.S.C. § 101 '(1970).
37   35 U.S.C. § 103 (1970).
38   417 F.2d at 1399.
39   *Id.* at 1400.
40   431 F.2d 882 (C.C.P.A. 1970).
41   *Id.* at 886.

> We cannot agree with the board that these claims are directed to non-statutory processes merely because some or all of the steps therein can also be carried out in or with the aid of the human mind or because it may be necessary for one performing the processes to think. All that is necessary, in our view, to make a sequence of operational steps a statutory "process" within 35 U.S.C. § 101 is that it be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of "useful arts."[42]

With *Musgrave*, the CCPA adopted a deliberate shift in standards.[43] In *Prater* the court placed much emphasis on the disclosure of apparatus in order to sidestep the "mental steps" doctrine.[44] In *Musgrave*, the CCPA could easily have acquiesced in precedent and held that (1) the process could be implemented entirely by machine,[45] or (2) that since no step in the process was purely mental, the claim did not read on nonstatutory subject matter.[46] Instead, it announced that where the submitted process was "within the technological arts" and "in consonance with the Constitutional purpose to promote the progress of useful art," it was patentable.

The extension of this rule is evidenced in a series of decisions subsequent to *Musgrave*, where the CCPA held, *inter alia*, that a method of processing seismograms was patentable,[47] that a method of converting binary coded decimals into pure binary numbers was patentable,[48] that a method for symbolic data retrieval was patentable,[49] and finally, that a method for determining the composition of a data word was patentable.[50] The standard which emerged from these decisions stipulated that any process utilized in the field of electronic data processing that heralded progress would be patentable so long as it satisfied the other statutory requirements of novelty and nonobviousness. From the perspective of the CCPA, digital computer programs, even those that merely enhanced the internal operation of the machine, would be patentable, since they would undoubtedly contribute to the progress of technological art.

Even though the grant of patentability seemed clear under the decisions of the CCPA, the Supreme Court gave notice that review was imminent in its grant of certiorari[51] in *Application of Benson*.[52] In *Benson*, the claim centered on a method[53] for converting binary coded decimals into pure binary numbers,

---

42 *Id.* at 893.
43 *Id.* (concurring opinion). The fact that the shift was expressly exposed as a major and radical shift yet adopted by the court gives clear indication that such an adoption was not unintended.
44 415 F.2d at 1403, 1405.
45 Such a rationale would have been consistent with the decision in *Prater* so that a confrontation with the "mental steps" doctrine could have been obviated. *Id.* at 894.
46 *Id.*
47 Application of Foster, 438 F.2d 1011 (C.C.P.A. 1971).
48 Application of Benson, 441 F.2d 682 (C.C.P.A. 1971), *rev'd sub nom.*, Gottschalk v. Benson, 409 U.S. 63 (1972).
49 Application of McIlroy, 442 F.2d 1397 (C.C.P.A. 1971).
50 Application of Waldbaum, 457 F.2d 997 (C.C.P.A. 1972).
51 Filing the petition for certiorari were the Justice Department, the Commerce Department, and the Patent Office. Application of Benson, *petition for cert. filed*, 41 U.S.L.W. 3039 (U.S. Oct. 5, 1971) (No. 71-485).
52 405 U.S. 915 (1972).
53 Binary code is a numerical system which has a base of 2, rather than 10 which is the base for the decimal system, and has merely two symbols (0,1) as opposed to the ten symbols

a process which the CCPA had previously determined was patentable. The Supreme Court reversed, however, holding that the process claim was so abstract and sweeping[54] that granting a patent on the claim would be tantamount to granting a patent on the mathematical formula itself.[55]

Commentators and practitioners had hoped that the Supreme Court decision would quell the controversy centering on computer programs.[56] They were confronted instead with a decision that fostered further confusion.[57] Speaking through Justice Douglas, the Court predicated its rejection of the patent claim on two grounds: (1) There was no limitation or substantial application of the claim so as to confine the monopoly within rather definite bounds,[58] and (2) Such an unlimited process was, in effect, the equivalent of an idea, upon which a patent could not be granted.[59]

In its argument attacking the "process" aspect of the claim, the Court maintained an inconsistent position. Despite its contention that the claim was so broad and sweeping, the Court acknowledged that its only application was in connection with the operation of a digital computer. The inherent nature of binary code restricts its application and the cumbersome conversion process all but precludes universal application of the process. Even the standard which the Court enunciated to determine the patentability of a process was satisfied. Quoting with approval the precedent of *Tilghman v. Proctor*,[60] the Court stated that the clue to patentability of a process not tied to a particular machine was the transformation or reduction of an article to a different state or thing.[61] Yet that is precisely what occurs when the computer program is added to the memory core of the computer. The program actually

---

of the decimal code. The binary code is especially suitable for electronic data processing machines since it can be represented by the presence (1) or absence '(0) of a pulse. The binary coded decimal is a halfway point between the decimal symbol and the pure binary symbol, and is achieved by positional location of the binary symbol in its equivalent decimal position. The *Benson* application claimed a method and apparatus to perform the conversion from binary coded decimals to pure binary numbers.

54   409 U.S. 63, 68 (1972).
55   *Id.* at 72.
56   *See* note 20 *supra*. Nearly every article in its conclusion looked to the Supreme Court as the appropriate forum for resolution of the patentability question.
57   For articles critical of the decision, *see* Dunner, Gambrell, White and Kayton, *Nonstatutory Subject Matter*, 14 JURIMETRICS 113 '(1973) [hereinafter cited as Dunner *Nonstatutory Subject Matter*]; Jacobs, *Patents for Software Inventions—The Supreme Court's Decision*, 55 J. PAT. OFF. SOC'Y 59 (1973); Freed, *Protection of Proprietary Programs in Light of Benson and Tabbot*, 13 JURIMETRICS 139 (1973); Sher, *Comment: Comm. of Patents v. Benson et al.*, 56 J. PAT. OFF. SOC'Y 179 (1974); Milgrim, *Software, Carfare and Benson*, 13 JURIMETRICS 240 (1973). For differing analyses, *see* Duggan, *Patents on Programs? The Supreme Court Says No*, 13 JURIMETRICS 135 (1973); Note, 14 B.C. IND. & COMM. L. REV. 1050 (1973). *See also*, Bigelow, *Infosystems, The Law and Patents*, 13 JURIMETRICS 129 (1973); Note, *Are Computer Programs Ever Patentable? Did the Patent Office Win?* 13 JURIMETRICS 248 (1973).
58   409 U.S. at 69. *See*, Sher, *Comment: Comm. of Patents v. Benson et al.*, 56 J. PAT. OFF. SOC'Y 179, 180-81 (1974).
59   409 U.S. at 71, 72.
60   102 U.S. 707 '(1880). It was the reliance of the Court on such antiquated cases where the questioned processes did not even resemble the computer program process that has caused consternation among commentators and practitioners. It is unclear why the Court relied on these precedents rather than evaluating those enunciated by the Court of Customs and Patent Appeals which focused directly on computer program processes. *See* Dunner, *Nonstatutory Subject Matter* at 117; Sher, *Comment: Comm. of Patents v. Benson et al.*, 56 J. PAT. OFF. SOC'Y 179, 180 (1974).
61   409 U.S. at 70.

> changes the physical conditions of the internal memories of computers, thereby creating tailored electronic circuits, as distinguished from hardwired circuits not so readily alterable but probably more easily patentable. Those new media either cause magnetized spots to be placed on surfaces of memory media or magnetize memory cores selectively. While the resulting changes in condition might in some cases be considered to serve as records of information on the new media, they represent physical elements that provide control and guidance of machines that process information automatically.[62]

An understanding of the operation of the computer and the effect that a program has on its operation is crucial to an intelligent evaluation of the patentability issue. It is singularly unfortunate that a disregard for the facts or a misconception of operation mechanics should serve as the basis for a denial of patent protection.[63]

A further critique of the Court's decision results from its deduction that a formula that lacks practical application outside a digital computer is the equivalent of an idea. A claim which is directed to the use of a mathematical formula to enhance the internal operation of a computer simply cannot be considered an idea.[64] The particular end to which the program is directed can neither add to nor detract from the character of the claim which is based on the program.

The final criticism which can be leveled against *Benson* arises from its debilitative impact on future policy. While the Court did not categorically deny patents to software, it effectively precluded resort to this type of protection. The varied interpretations of the holding,[65] as well as the suspect integrity of the decision itself, give credence to the argument that some computer programs might be patentable, but the cost of litigation[66] makes that argument a specious one. Further, the Court implicitly approved an arbitrary policy of discrimination whereby patents can be obtained on hardware circuits yet cannot be obtained

---

62 *See* Freed, *Protection of Proprietary Programs in Light of* Benson *and* Tabbot, 13 JURIMETRICS 139, 140 (1973).

63 To many commentators, the facts were disregarded so that a preordained decision could be delivered, denying patentability to software, and thereby appeasing the hardware manufacturers. The Patent Office had long ago spoken against patentability of programs, premising their argument on the difficulty in creating a search and classification technique to evaluate the prior art. It is arguable, however, that any such program is necessarily doomed since more is expected than can mechanically be accomplished, since no program could have the hardware "analyze" the prior art. A more modest program, one that would merely tag similar patents for scrutiny by an examiner, might be more successful. Certain classification keys could be established, such as purpose, similarity of operational sequence, similarity of material, which would facilitate the search. Nevertheless, the Patent Office has staunchly maintained its position. Further pressure seems to have developed by the entry of the Justice Department which has consistently sought to limit the expanse of the patent law. *See* Dunner, *Nonstatutory Subject Matter* at 118 & n.2, 119 n.3.

64 *See* Dunner, *Nonstatutory Subject Matter* at 114.

65 For a view in favor of the broad interpretation that no software is patentable, *see,* Duggan, *Patents on Programs? The Supreme Court Says No,* 13 JURIMETRICS 135, 136 (1973). *But see,* Jacobs, *Patents for Software Inventions—The Supreme Court's Decision,* 13 JURIMETRICS 132 (1973). Two attorneys who filed *amicus* briefs, Morton Jacobs for ADAPSO favoring protection and Elmer 'Galbi of IBM opposing it, have noted that *Benson* was a fairly narrow holding. *See,* Dunner, *Nonstatutory Subject Matter* at 119 n.5. *But see* the ominous announcements of the Patent Office that all decisions will be reviewed for possible application of *Benson.* Dunner, *Nonstatutory Subject Matter* at 122 n.32.

66 *See* 119 CONG. REC. 2865, 2866 (daily ed. April 17, 1973) (remarks of Rep. Owens).

on their software equivalents.[67] It sanctioned a policy of the Patent Office clearly favorable to the giants in the electronic data processing industry and emasculated the decisions of the CCPA which had redressed that imbalance.[68] Finally, by its decision, the Court unduly frustrated the constitutional directive to promote the progress of useful art.[69] It denied the computer program the comprehensive protection necessary for full disclosure to be effective and stunted the concomitant improvement. In an industry where only a small part of its potential has been realized, the Court has impeded further developments by making secrecy rather than disclosure the only means of protection.

C. *Copyright Protection*

Copyright protection confers on the author-recipient the exclusive right to print, publish, copy, vend, translate, deliver, and perform the copyrighted work[70] for a period of twenty-eight years.[71] The unprivileged exercise of any of these enumerated rights is a "copying" which may amount to infringement.[72]

Copyright protection was made expressly available for computer programs by virtue of a 1964 announcement of the Copyright Office.[73] Nevertheless, this mode has been criticized for offering too little protection by failing to center its protection on the crux of the computer program.[74] The copyright extends only to the peculiar expression which the writing takes and not to the underlying idea itself. This inherent limitation of copyright protection must be recognized. It extends only to the prohibition of unauthorized duplication; it does not extend to protection against unauthorized use.[75] Whereas copyright can frustrate the intentional reproduction of a writing, only the patent can protect against use of an inventive idea. This distinction must be appreciated if confusion between copyright and patent is to be avoided and the stricter requirements for a patent justified.

---

67   Jacobs, *Patents for Software Inventions—The Supreme Court's Decision,* 13 JURIMETRICS 132, 133 (1973).

68   *See* Duggan, *Patents on Programs? The Supreme Court Says No,* 13 JURIMETRICS 135, 137 (1973); Note, 14 B.C. IND. & COMM. L. REV. 1050, 1060 '(1973).

69   The near unanimous response to the *Benson* decision has been inquiry into the availability as well as the efficacy of trade secret protection. *See, e.g.,* Milgrim, *Software, Carfare and Benson,* 13 JURIMETRICS 241, 244-47 (1973).

70   17 U.S.C. § 1 (1970).

71   17 U.S.C. § 24 (1970).

72   2 M. NIMMER, COPYRIGHT §§ 141-49 '(1963, Supp. 1974).

73   *See* Cary, *Copyright Registration and Computer Programs,* 11 BULL. COPYRIGHT SOC'Y 362, 367 (1964). That announcement has received legislative sanction. Proposed § 102(a) of the Copyright Law Revision, S. 1361, 93d Cong., 2d Sess. (1974) provides:

> Copyright protection subsists, in accordance with this title, in original works of authorship, fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or *with the aid of a machine or device* . . . . (emphasis supplied).

74   *See* Bender, *Patents, supra* note 8, at 249.

75   The question which will ultimately have to be resolved is whether the hardware "copies" the software when it processes information in accordance with the program. It is clearly a "use" as envisioned by patent protection, but is it a "copying" of the program? Manipulation of the copyright laws could produce such a result, but the wiser course would be to respect the distinction between patent rights and copyright, and hold that there must be some element of intent for copying, i.e., a deliberate reproduction of the instructions. One caveat need be offered. Copying need not be limited to a particular medium. A fourth-generation hardware could conceivably copy a program used by a third-generation machine. Whether that argument will be judicially upheld will determine the future efficacy of copyright protection.

Such a restriction does not fully emasculate copyright protection. It is still an effective means to protect the valuable computer program which fails to satisfy the requirements for a patent.[76] Such programs include long compilations for data processing where the key benefit is the minimal use of costly computer time. The complex nature of these more sophisticated programs is such that only a skilled programmer can discern the root idea. To maintain the time saving factor while incorporating the basic premise of the old program into a schematically different yet functionally equivalent new program would be difficult. The time and expense required for such a translation and the ethics of the profession would sustain the value of copyright protection.

With innovative computer programs, the key benefit is not minimal time use but the novel approach to problem solving. Even though the particular expression of the program is all that can be protected by copyright, the inventive idea is often inextricably wound within its expression and the protection of the expression necessarily protects the idea. Thus, the line dividing the sanctioned "borrowing" of an idea and the infringing "copying" of an expression blurs when a complex computer program is involved.

The actual effectiveness of copyright protection will be dictated by the judicial determination of infringement. The courts are free to develop a standard consistent with a limitation of copyright which offers effective protection against piracy.[77] No court has yet adjudicated an alleged copyright infringement of a computer program, but it is clear that present standards for literary infringement are inadequate. The technical nature of a computer program requires a new test for infringement. Factors which ought to be considered in developing this test include: (1) focus and purpose of the programs, (2) similarity of operational sequences, (3) significance of dissimilar material,[78] (4) common errors,[79] and (5) repetition or appearance of a unique or qualitatively significant term.[80] The appearance of these elements, cumulatively weighed, would establish the inference of copying, which would shift to the alleged infringer the burden of establishing the independent nature of his program.[81]

Thus, effective copyright protection is not totally precluded. With compilation programs, timesaving sequences can be protected and piracy prevented. Further, even though the copyright cannot be directed at the inventive idea alone, it can afford protection when the idea is inextricably wound within the program's sequence. Finally, if a new definition of infringement were adopted,

---

76 *See* Bender, *Patents, supra* note 8, at 250.
77 17 U.S.C. § 101 '(1970) provides that if a copyright is infringed, the recipient shall have remedies extending from injunction and damages to impounding and destruction of the infringing material. While there is a listing of the available remedies, there is no definition of what conduct would amount to an infringement. Presumably, the courts are left to develop a case-by-case definition. *See* 2 M. NIMMER, COPYRIGHT §§ 141-49 (1963, Supp. 1974).
78 2 M. NIMMER, COPYRIGHT § 143.2 (1963, Supp. 1974).
79 *Id.* § 143.3.
80 Stratchborneo v. ARC Music Corp., 357 F. Supp. 1393, 1404 (S.D.N.Y. 1973). For other judicial determinations which might be analogized to copyright protection for computer programs, *see* Consolidated Music Pub., Inc. v. Hansen Publications, Inc., 339 F. Supp. 1161, 1165 (S.D.N.Y. 1972); McGraw-Hill, Inc. v. Worth Publishers, Inc., 335 F. Supp. 415, 420 (S.D.N.Y. 1971).
81 2 M. NIMMER, COPYRIGHT § 139.4 (1963, Supp. 1974).

the copyright could become an effective deterrent to unauthorized use of computer programs.

D. *Trade Secrets*

Trade secret protection extends to any formula, pattern, device, or compilation of information used in one's business which provides an opportunity to obtain an advantage over competitors who do not know or use it.[82] The doctrine affords the owner of a trade secret a tort remedy when his secret has been unlawfully obtained or unethically acquired.[83] To qualify for resort to this mode of protection, minimal requirements must be satisfied. The need for secrecy is not absolute; it need only be a substantial secrecy such that it is difficult for others to acquire.[84] There is no requirement for invention or originality, although some originality must exist if the secret is to be a trade secret at all.[85] To establish his claim for relief, the owner of the trade secret need only prove its existence, its value to the business, his right to use it, and the acquisition by the defendant through unlawful or unethical means.[86]

Since his work falls within the standard enunciated for protection, the computer programmer has ready access to this device. Unlike the patent, it is not necessary to follow any prescribed course of conduct before the work can be protected. Unlike the patent, the secret is not limited to any particular written claim; it is as expansive as the secret itself.[87] There is no cost to maintain the protection, nor is there the risk that after substantial expense and litigation no protection will be realized. Further, the burden of establishing an infringement is absent and the programmer's complaint is bolstered by the natural aversion of the courts to practices which compromise business integrity.

---

82 *See* RESTATEMENT OF TORTS § 757, comment b at 5 (1939).
83 RESTATEMENT OF TORTS § 757 (1939) provides:
    One who discloses or uses another's trade secret, without a privilege to do so, is liable to the other if
    (a) he discovered the secret by improper means, or
    (b) his disclosure or use constitutes a breach of confidence reposed in him by the other, in disclosing the secret to him, or
    (c) he learned the secret from a third person with notice of the facts that it was a secret and that the third person discovered it by improper means or that the third person's disclosure of it was otherwise a breach of his duty to the other, or
    (d) he learned the secret with notice of the facts that it was a secret and that its disclosure was made to him by mistake. *Id.* at 1, 2.
84 55 AM. JUR. 2d *Monopolies, Restraints of Trade, and Unfair Trade Practices* § 706 (1972).
85 RESTATEMENT OF TORTS § 757, comment a at 5, comment b at 7, 8 (1939).
86 55 AM. JUR. 2d *Monopolies, Restraints of Trade, and Unfair Trade Practices* § 704 (1972).
87 *See* 35 U.S.C. § 112 '(1970) which provides:
    The specification in the patent application shall contain a written description of the invention, 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 particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. . . .
There is no equivalent requirement for the trade secret. When there is an unlawful or unethical appropriation of *any* formula, pattern, or device which provides the owner a competitive advantage, he can present a claim for relief.

Despite these benefits and the relative ease of access to such protection, the programmer who resorts to the trade secret device does not acquire a full measure of protection for his inventive idea. The legitimate acquisition of another's trade secret is no cause for liability, since such liability is predicated on unlawful appropriation, breach of a confidential relation, or breach of a contractual agreement.[88] More importantly, resort to the trade secret device imposes serious constraints on technological advance. Secrecy necessarily encourages suspicion, duplicates effort, and restricts efficiency. Critical evaluation of programs is crucial if progress is to be realized, yet resort to the remedy of trade secrets precludes analysis of the secret and fails to utilize the cornerstone of improvement, the free exchange of ideas. Thus, the trade secret device must be recognized as a halfway measure. While it provides protection to the programmer, it secures nothing in terms of disclosure. Yet, the publication of new ideas and techniques is essential if technological progress is to be more than piecemeal and haphazard. The constitutional mandate to promote the progress of science and useful arts is prohibited by any device which provides limited protection at the expense of future progress. In an industry where only a small portion of potential growth has been realized, such expediency is too expensive a price to pay.

III. Conclusion

It is still too early to gauge accurately the full impact of the Supreme Court's decision in *Benson* to reverse the trend toward patentability enunciated by the CCPA. One result is clearly discernible, however. The CCPA standard has been quietly, albeit reluctantly, abandoned. In *Application of Christensen*,[89] decided one year after *Benson*, the claim centered on a method for determining the porosity of subsurface formations. The only departure from prior art consisted in the mathematical formula.[90] The claim, with novelty predicated on the equation, would have satisfied the earlier standards of patentability; nevertheless, the CCPA concluded that if the only point of novelty in the application resided in the mathematical formula, then, consistent with *Benson*, the claim for patentability could not be granted.[91]

Skepticism still plagues the efficacy of copyright protection for computer programs. With no court decisions for guidance, and no clear-cut indication that copyright infringement suits will be better received than patent infringement actions, business acumen dictates against this mode of protection, since the competitive advantage of any novel programs would be lost through disclosure.

The programmer's only current recourse is to treat the program as a trade secret. Certainly, where protection with disclosure cannot be obtained, protection without disclosure is a legitimate recourse.[92] Yet, even here drawbacks abound. When the trade secret remedy is utilized, future progress is sacrificed for im-

88   Bender, *Trade Secrets, supra* note 7, at 930.
89   478 F.2d 1392 (C.C.P.A. 1973).
90   *Id.* at 1394.
91   *Id.* Such a pronouncement renders suspect the validity of the logic as well as the patent in *Application of Bernhart*, 417 F.2d 1395, 1399 (1969).
92   Bender, *Post-Adkins Trade Secret Protection of Software*, 1970 RUTGERS J. COMP. & LAW 5, 10.

mediate protection with the result that new developments are more costly, less beneficial, and less certain. To sacrifice the future efficiency of the electronic data processing industry for present expediency is inconsistent with the idea of promoting the progress of science and useful arts. Yet, that is precisely the result dictated by *Benson*. Secrecy has become the only certain method to secure protection. The remaining question then becomes simply how desirable is this alternative, especially since the ready resort to secrecy by the inventor leads inexorably to "scientific and technical asphyxiation."[93] Surely no result is more anomalous with the constitutional directive.

However, it should not be concluded that patent protection which achieves the optimum balance between protection and disclosure remains completely foreclosed. In deciding *Benson*, the Supreme Court requested special congressional action if a shift in policy in favor of patentability of programs were to be made.[94] Legislative sanction for computer programs would definitely resolve any questions and would foster a more receptive attitude toward programmers in the courts during infringement suits. However, the likelihood of such legislation is minimal, as the past history of proposed general revision bills clearly indicates.[95] Perhaps a special purpose bill, related solely to granting patent protection to computer programs, would fare better than the general revision proposals.[96] Such optimism, however, conflicts with the success of hardware manufacturers in preventing software producers from securing protection.[97] Software producers would undoubtedly be confronted with the same vigorous opposition that frustrated their earlier arguments before the President's Commission and the Patent Office. Finally, it is difficult to portray the drastic need for implementation of patent protection by legislative action when the software industry is rapidly expanding without it.[98] Arguments for even better performance are apt to receive scant attention. Thus, the likelihood that Congress will provide patent protection seems small indeed.

Another alternative is that the Supreme Court might perceive the need to reassess its earlier pronouncement, so as to define the status of software with greater certainty. The nature of software does not inherently preclude such a posture. Such a response is unlikely to arise, however, since *Benson* was directed to a particular claim and was not intended as a general evaluation on the patentability of computer programs.[99] Further, it appears that the Court was reluctant to take the initial steps necessary to make patent protection available. Instead, the policy decision was foisted upon the Congress.[100]

Only the CCPA seems capable of resurrecting patent protection for the

---

93   Mahon, *Trade Secrets and Patents Compared*, 50 J. PAT. OFF. SOC'Y 536, 551 (1968).
94   409 U.S. at 73.
95   *See* 119 CONG. REC. 2865, 2866 (daily ed. April 17, 1973) (remarks of Rep. Owens).
96   *See* Galbi, *The Prospect of Future Legislation and Court Action Concerning the Protection of Programming*, 13 JURIMETRICS 234, 236 (1973).
97   Such success is witnessed in the Report of the President's Commission on Patents, *supra* note 23, which recommended against patentability as well as in the Guidelines promulgated by the Patent Office, *supra* note 24. It is also apparent from the absence of any specific protective legislation.
98   *See* McLaughlin, *A Survey of 1974 dp Budgets*, DATAMATION, February 1974, at 54.
99   409 U.S. at 71.
100   409 U.S. at 73.

computer program. The quickest and most effective means to that end would be for the court to reassert its standard of patentability through a careful distinction of *Benson*. Since that decision is susceptible to a variety of interpretations,[101] the CCPA could choose to apply it narrowly. In doing so, it would be faithful to the interpretation advanced by the Supreme Court yet consistent with the constitutional directive to promote the progress of science and useful art. Such a posture would hopefully prod both the Patent Office and Congress to provide measures whereby hardware and software equivalents would be provided the same protection. Justification for such a stance would be grounded on the expertise and familiarity which the CCPA has developed with the computer program. Support would likewise come from the basic concept of fairness, which only this court seems to have appreciated, that if hardware circuitry is granted a patent, then its engineering equivalent, the computer program, should be offered the same protection. A final rationale might be adduced from the interpretative role of the CCPA, which has the responsibility to evaluate patent claims in light of the patent law as well as the constitutional directive. Where the only alternative is a policy of blatant discrimination between data processing equivalents, the CCPA must assume this posture if patent protection for computer programs is ever to be gained.

John J. McHugh III

---

101 *See* note 65 *supra.*