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## In Re Prater and Patent Reform Proposals: 'Debugging' the Patent Office's Administration of Computer Program Applications

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# COMMENT/In re *Prater* and Patent Reform Proposals: 'Debugging' the Patent Office's Administration of Computer Program Applications

## *Introduction*

The tremendous growth of the computer industry over the past twenty years has renewed interest in the underlying philosophy of protection for intellectual and industrial activities. The computer industry has traditionally been divided into protected and non-protected areas. The protected area consists of "hardware" and includes physical equipment produced by the computer manufacturers, as well as peripheral equipment developed by specialty houses. New equipment sales for 1967 amounted to \$5.9 billion, resulting in a total worth of computer equipment in the United States alone of \$13 billion.<sup>1</sup> It is estimated that hardware sales will level off at \$4 to \$5 billion for the next three years,<sup>2</sup> and that the number of computers in use in this country will increase from 35,000 to 85,000 worth \$30 billion by 1975.<sup>3</sup>

The unprotected area consists of "software" and includes both "system" and "application" programs. System programs are those which are permanently stored in the machine and direct the operation of the machine.<sup>4</sup> Application programs are those which are developed to solve a particular problem for the user.<sup>5</sup> Software and support service costs were \$3.4 billion in 1967<sup>6</sup> and are ex-

1. *Computers: The Booming State of the Art*, NEWSWEEK, Aug. 19, 1968, at 68. In terms of capital expansion, for each \$1 million spent on new plants in 1967, \$63,000 was spent on computers. The comparable figure in 1963 was \$33,000.

2. Burck, *The Computer Industry's Great Expectations*, FORTUNE, Aug. 1968, at 93. At the present time, International Business Machines Corporation (IBM) dominates the hardware market with 70 percent of all manufacturing business and 90 percent of the profits, but does not occupy as great a position with respect to programming. *Id.* at 95.

3. Wise, *I.B.M.'s \$5,000,000,000 Gamble*, FORTUNE, Sept. 1966, at 118; McCarthy, *Information*, in INFORMATION 3 (1966). The time sharing industry, which consists of users leasing time from a computer owner, is estimated to have earned \$20 million in 1967. This is expected to increase to one-half the dollar volume of the entire computer industry in the 1970's. The introduction of fourth generation equipment will probably determine the future success of leasing companies since technological changes are not anticipated to be as great as the differences in the first three generations. NEWSWEEK, *supra* note 1, at 69; *Under IBM's Umbrella*, FORBES, July 15, 1968, at 17; *Computers, The Leasing Game*, TIME, Sept. 15, 1967, at 95; *A New Name in Computer Leasing*, BUS. WEEK, Sept. 9, 1967, at 41.

4. The scope of system programming can be shown by the development of IBM's third generation System 360, with over 2000 programmers engaged in the programming effort and total programming costs expected to exceed \$200 million. See Wise, *The Rocky Road to the Market Place*, FORTUNE, Oct. 1966, at 138, 212.

5. Users may include more than one company. In the Mark IV memory bank control program, five companies underwrote the cost of development, which exceeded \$500,000. *Software Gets a Hardsell Approach*, BUS. WEEK, Oct. 21, 1967, at 171, 172. Few software houses can risk that much capital on an unprotected program.

6. NEWSWEEK, *supra* note 1, at 68.

pected to increase to \$11 billion by 1972.<sup>7</sup> A comparison of the projected figures indicates that software costs will soon exceed hardware costs; thus the problems facing the software houses will become the dominant problems of the industry.

The present debate concerns the extent and type of protection which should be afforded the software portion of the industry. Opponents of a patent-type limited monopoly to cover computer programs point out that the software industry has experienced a growth rate of 40 to 50 percent in each of the last two years.<sup>8</sup> This argument suffers from the same defect as the similar argument raised by opponents of the entire patent system, *i.e.*, that there is no zero base point from which to draw a comparison between the performance of an industry when protected and when non-protected.<sup>9</sup> Moreover, the problems of the software industry are not in its growth rate but rather in the quality and duplication of effort in the programming being done.<sup>10</sup> In view of the serious lack of skilled programmers available,<sup>11</sup> any protection which would increase quality and reduce duplication would greatly benefit the industry.

The current state of the debate finds the Copyright Office committed to the copyrighting of programs.<sup>12</sup> However, a copyright official has conceded that this is only an administrative decision and may not be supportable in court.<sup>13</sup> To re-

7. Burck, *supra* note 2, at 142.

8. *Id.* at 93.

9. O'Brien, *An Appraisal of the Report of the President's Commission on the Patent System*, 49 J. PAT. OFF. SOC'Y 139, 143 (1967).

10. Robert Everett, vice-president of MITRE Corp., as reported in AEROSPACE TECHNOLOGY, March 25, 1968, at 60, noted that techniques in writing software were falling behind art advances in hardware. Richard Jones, president of Applied Data Research, Inc., in a statement submitted Feb. 1, 1968 to the Senate Subcommittee on Patents and Copyrights, as reported in COMPUTERS AND AUTOMATION, March 1968, at 11, labelled the programming problem as the "Achilles heel" of the industry. See also *Hobbs, Progress in the Computer Field*, COMPUTER GROUP NEWS, July 1967, at 1, 9: "Timely and economic production of programs . . . remains a serious problem area and a limiting factor in developing computer applications." Frequently the delivery of control programs lags delivery of equipment and prevents full utilization of the computer. An equally serious problem is the inability of management to correctly state the problems that programmers are to solve. Bylinsky, *Help Wanted: 50,000 Programmers*, FORTUNE, March 1967, at 141, 142.

11. Accurate figures on the number of programmers available are difficult to obtain because many who are trained never utilize that training. In 1966, one estimate was 120,000 then employed, with 55,000 more needed and an expected requirement of 220,000 in the United States alone by 1970. *Software Gap—A Growing Crisis for Computers*, BUS. WEEK, Nov. 5, 1966, at 127. However, another estimate just four months later stated that 100,000 were employed with needs for 50,000 more. Bylinsky, *supra* note 10, at 141. A similar problem exists in Europe where employment of programmers in 1966 was estimated at 60,000, with additional needs of 120,000 and anticipated needs in 1970 of 300,000 programmers. *The \$5-Billion World Market for Computers*, BUS. WEEK, Feb. 19, 1966, at 110. See also NEWSWEEK, *supra* note 1.

12. Copyright Office Circular 16 and 31D.

13. Cary, *Copyright Registration and Computer Programs*, 11 BULL. COPYRIGHT SOC'Y 362, 367 (1964).

inforce the decision, the copyrighting of programs has been included in the Copyright Revision Bill now pending in Congress.<sup>14</sup>

The official attitude of the Patent Office is expressed in the guidelines published by the Commissioner of Patents: "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."<sup>15</sup> These guidelines reflect Recommendation No. IV of the President's Commission on the Patent System<sup>16</sup> and also find support in proposed legislation pending before Congress.<sup>17</sup> The unofficial attitude of the Patent Office is uncertain, for patents which would appear to violate these guidelines have been issued.<sup>18</sup> The Patent Office's claim that it has not issued patents for programs has been characterized as speculative in view of the unclear meaning of the terms computer and program as used by the Patent Office.<sup>19</sup> One expert reported that the Patent Office had decided to patent programs just two years before the issuance of the guidelines.<sup>20</sup> Proposed legislation supported by the American Bar Association and the McClellan bill take a neutral position by omitting any mention of the patentability of computer programs.<sup>21</sup>

In contrast to the Patent Office position, the Court of Customs and Patent Appeals (CCPA) has held<sup>22</sup> that broad claims to either a process or means plus function, which read on a programmed computer, are patentable under the relevant statute<sup>23</sup> and judicial decisions.<sup>24</sup> A rehearing has been granted over a vigorous dissent by Judge Rich.<sup>25</sup> Informal contacts with the Patent Office indicate that review by the Supreme Court might be sought in the event the decision

14. S. 543 and H.R. 2512, 91st Cong., 1st Sess. § 102 (1969).

15. *Examination of Patent Applications on Computer Programs*, 33 FED. REG. 15609, 15610 (1968).

16. REPORT OF THE PRESIDENT'S COMMISSION ON THE PATENT SYSTEM, 'TO PROMOTE THE PROGRESS OF . . . USEFUL ARTS' IN AN AGE OF EXPLODING TECHNOLOGY (1966) [hereinafter cited as REPORT OF THE PRESIDENT'S COMMISSION].

17. S. 1042 and H.R. 5924, 90th Cong., 1st Sess. § 106 (1967).

18. United States Patent 3,380,029 is referred to by its inventor as the first program patent. FORTUNE, Aug. 1968, at 34.

19. Nimitz, *Computers, Programs and the Patent Laws*, 11 IDEA 199, 207 (1967).

20. G. DAVIS, AN INTRODUCTION TO ELECTRONIC COMPUTERS 501 (1965).

21. S. 2597, 90th Cong., 1st Sess. (1967); S. 1246, 91st Cong., 1st Sess. (1969) (McClellan bill). See A.B.A. SECTION OF PATENT, TRADEMARK AND COPYRIGHT LAW 13, 143 (Resolution 7) (1967).

22. *In re Prater*, 159 U.S.P.Q. 583 (1968).

23. Patent Act of 1952, 35 U.S.C. §§ 101-03, 112 (1964).

24. *Waxham v. Smith*, 294 U.S. 20 (1935); *Smith v. Snow*, 294 U.S. 1 (1935); *Telephone Cases*, 126 U.S. 1 (1888); *Tilghman v. Proctor*, 102 U.S. 707 (1881); *Cochrane v. Decner*, 94 U.S. 780 (1877); *Halliburton Oil Well Cementing Co. v. Walker*, 146 F.2d 817 (9th Cir. 1944), *aff'd mem.*, 326 U.S. 696 (1946); *Don Lee, Inc. v. Walker*, 61 F.2d 58 (9th Cir. 1932); *In re Shoa Wan Yuan*, 188 F.2d 377 (C.C.P.A. 1951); *In re Abrams*, 188 F.2d 165 (C.C.P.A. 1951).

25. *In re Prater*, 160 U.S.P.Q. 230 (1969).

is affirmed upon rehearing. Thus the professionals in the patent and copyright fields are split over the issue of protection for programs.

Representatives of the computer industry are equally divided on the issue of protection, with the equipment manufacturers favoring non-protection and software houses urging protection.<sup>26</sup> The manufacturers' position is that the industry has experienced rapid growth in the software area without protection and that the sharing organizations now in existence provide the means for free exchange of computer programs.<sup>27</sup> The rapid growth argument, however, ignores the quality and duplication problems discussed above, while sharing organizations have been criticized as being hardware oriented and as not providing any incentive for sharing of important and costly programs.<sup>28</sup> Supporters of protection for programs within the industry view the Patent Office's position as discriminatory against software houses. In order to end this discrimination, they suggest either the protection of software or the exclusion of all computer technology from protection.<sup>29</sup> It is argued that the Patent Office's exclusion of computer programs from patenting is broad enough to extend to all machine equivalents of a computer, and possibly to all processes which could be performed by a suitably programmed computer.<sup>30</sup> Supporters also point out that only one other area of technology has been excluded from patentability by statute—the rather limited area of atomic energy applications.<sup>31</sup>

At best, the present state of the law in this area is confused, since the interested administrative, judicial, legislative and professional organizations have adopted conflicting opinions. The programmer, faced with these positions, not only cannot determine the *extent* of his right to protection but cannot even safely determine if he *has* a right to protection. This comment will briefly outline the present

26. See Hirsch, *The Patent Office Examines Software*, DATAMATION, Nov. 1966, at 79.

27. Some 20 program exchange organizations had been formed by 1960. Chang, *Computer Program Exchange: Myth and Reality*, in SECOND CONFERENCE ON ELECTRONIC COMPUTATION, AMERICAN SOCIETY OF CIVIL ENGINEERS 27 (1960).

28. *Editor's Readout*, DATAMATION, June 1966, at 21; Banzhof, *Legal Protection for Computer Programs*, DATA PROCESSING MAGAZINE, July 1964, at 8.

29. Shockley, *A Dim View*, RESEARCH MANAGEMENT, Nov. 1967, at 399; BUS. WEEK, *supra* note 5, at 178; Jackson, *Speech Before Conference on Improving Industrial and Intellectual Property Systems for Greater Social Progress*, 11 IDEA 66, 70 (Conference Number 1967).

30. Jacobs, *Commission's Report (re: Computer Programs)*, 49 J. PAT. OFF. SOC'Y 372 (1967). The Patent Office Board of Appeals indirectly strengthened this argument in *Prater* by affirming the examiner's rejection of the apparatus claims as obvious in view of the allegedly non-statutory process claims.

31. Atomic Energy Act of 1954, § 151, 42 U.S.C. § 2181 (1964). The statute provides for reasonable compensation for inventors in this area even though their invention is unpatentable. *Id.* at § 153(g), 42 U.S.C. § 2183(g). This has been offset by contract clauses between the inventor and the Atomic Energy Commission. Puishes, *Compulsory Licensing of Patents and Atomic Energy* [sic], 42 J. PAT. OFF. SOC'Y 694, 695 (1960). See also Jacobs, *supra* note 30; Nimtz, *supra* note 19.

protection available to the programmer, suggest the type of protection most suitable for programs, and discuss possible ways of achieving protection with minimal changes in current patent law.

Three basic means of protection are possible under current law (although none is fully satisfactory to either the programmer or the public): trade secret, copyrighting, and patenting.

### *Trade Secret Protection*

There is no doubt that a programmer can treat a program as a trade secret and thus acquire a measure of protection for his work.<sup>32</sup> However, the basic requirements which must be met include restricted access to the program, some degree of novelty, and retention of both the secrecy and novelty.<sup>33</sup> "Consequently, their owners do everything possible to *prevent* disclosure."<sup>34</sup> As a practical matter, then, successful protection by means of the trade secret approach results in public nonaccess to the program.

Successful protection of a trade secret in itself, moreover, is difficult to achieve. Employees and outsiders may be bound by contract not to disclose the secret programs. In the event of disclosure by these persons or by any improper means, the employer may seek relief in the form of an injunction or damages.<sup>35</sup> To recover, however, he may be forced to prove the existence of the trade secret, which could mean a full disclosure of the program during the trial. At the very least, this will result in the defendant and possibly the public having "been given a scholarship with reference to the plaintiff's processes or other secret matter."<sup>36</sup> Even with such a contract, the employer cannot bind a programmer so as to preclude him from practicing his skills for another employer.<sup>37</sup> To enforce such a contract, the employer must prove that the programmer's actions have exceeded the use of his skills and have invaded the area of protected secrets.<sup>38</sup>

32. Trade secret law presently covers many processes not accorded protection by patent law. See R. MILGRAM, *TRADE SECRETS* § 2.01 (1968); R. ELLIS, *TRADE SECRETS* §§ 12, 13 (1953); Baram, *Trade Secrets: What Price Loyalty?* HARV. BUS. REV., Nov.-Dec. 1968, at 66; Wessel, *Legal Protection of Computer Programs*, HARV. BUS. REV., Mar.-Apr. 1965, at 97. In 1967, there were over 100 proprietary programs protected as trade secrets, with sales of programs exceeding \$4 million. BUS. WEEK, *supra* note 5, at 178.

33. R. MILGRAM, *supra* note 32, at §§ 2.03, 2.08; R. ELLIS, *supra* note 32, at §§ 17, 26.

34. R. ELLIS, *supra* note 32, at § 2.

35. R. MILGRAM, *supra* note 32, at § 7.08; R. ELLIS, *supra* note 32, at § 224.

36. R. MILGRAM, *supra* note 32, at § 7.06[2].

37. *Id.* at § 5.02[3].

38. *Ibid.* Other related problems in the use of contracts to secure protection include: (1) whether the scope of the contract is so broad as to be unenforceable or so narrow as not to provide any protection; (2) whether tort as well as contract recovery

The use of trade secret protection is generally accepted in the programming industry.<sup>39</sup> The disadvantages of the resulting secrecy have been partially counteracted by the many sharing organizations formed to promote voluntary interchange of programs among programmers. The program sharing groups, however, are largely sponsored by hardware manufacturers who provide library facilities and even programs for use by purchasers of their equipment. Few users are willing to donate their more important programs, which might be giving them a competitive edge over other firms.<sup>40</sup> Thus the best programs are now protected by trade secret law, and it is these programs which would most benefit the computer industry and the public if fully disclosed.

### *Copyright Protection*

A more limited form of protection is available under copyright registration, but this form has the serious drawback of full publication without adequate safeguards against infringement.<sup>41</sup> All that is protected is the *form* of expression and not the novel ideas which may be expressed in the program.<sup>42</sup> Although an infringement suit involving a copyrighted computer program has yet to be litigated, this principle has been followed in the courts,<sup>43</sup> with the only exceptions being for immaterial variations.<sup>44</sup> Clearly any reasonably skilled programmer could, having gained access to the program by the publication required for registration of a copyright,<sup>45</sup> produce a program in a different form to achieve the same result and thus avoid liability for infringement. While this might involve "de-bugging" and proving costs, these would surely be less than the de-

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is possible; (3) whether a jury trial can be demanded, resulting in a less confidential trial; (4) whether the agreement would have adverse psychological effects upon the programmers. *Id.* at § 3.02; Doerfer, *The Limits on Trade Secret Law Imposed by Federal Patent and Antitrust Supremacy*, 80 HARV. L. REV. 1432 (1967).

39. See Baram, *supra* note 32, at 73, where it is suggested that management use whatever protection is available from trade secrets even though it would be unwise to rely completely upon such protection. See also Sheers & Encke, *Copyrights of Patents for Computer Programs?* 49 J. PAT. OFF. SOC'Y 323 (1967).

40. Banzhaf, *Copyright Protection for Computer Programs*, 14 COPYRIGHT LAW SYMPOSIUM (ASCAP) 118, 166 (1966).

41. Copyright Office Circular 31D; see Katona, *Legal Protection of Computer Programs*, 47 J. PAT. OFF. SOC'Y 955 (1965), for a proposal which would overlap copyright and patent protection to insure coverage of both the form and substance of the program; see also Lawlor, *Copyright Aspects of Computer Usage*, 11 BULL. COPYRIGHT SOC'Y 380 (1964); Cary, *supra* note 13.

42. M. NIMMER, COPYRIGHT §§ 37.2, 37.4 (1967); H. HOWELL, COPYRIGHT LAW 132 (rev. ed. 1962).

43. *Baker v. Selden*, 101 U.S. 99 (1880).

44. *Nichols v. University Pictures Corp.*, 45 F.2d 119 (2d Cir. 1930), *cert. denied*, 282 U.S. 902 (1931).

45. Copyright Act of 1947, 17 U.S.C. § 10 (1964); M. NIMMER, *supra* note 42, at ch. 4; H. HOWELL, *supra* note 42, at 61.

velopment costs of the original program and might be less than any proposed royalty. Since the programmer is faced with a high cost of initial development he must set royalties high enough to recoup his investment by sales of program copies which can be produced at a low cost. Thus the cost of plagiarizing might be small enough to justify the risk of infringing the copyright, except for extremely long and complex programs which would involve large damages.

Furthermore, the probability of detection would be minimal.<sup>46</sup> Without a printout of the program, it would be almost impossible to detect the similarities. Such a printout would be difficult to obtain even in the case of the program's resale rather than use by the plagiarizer. The persons who have access to the program while it is in the computer are normally not programmers and would not recognize any similarities. Other programmers might have access to only a portion of the program.

Difficult as detection might be, most reputable companies would probably refrain from plagiarizing if a copyrighted program were available for a reasonable royalty. Repeated infringements of a copyright would increase the probability of detection as programmers join and leave the company. The very presence of a copyrighted program encourages licensing because of the high initial cost of a program compared with the low cost for duplication.<sup>47</sup> To date, copyright protection has not been extensively used,<sup>48</sup> probably because of the minimal protection afforded in comparison to trade secrets and because of the practice of hardware manufacturers providing "free" programs with their machines.<sup>49</sup> The use of copyrights would probably increase if the package marketing of hardware and software by manufacturers were halted. However, it is doubtful that the best programs would be copyrighted because of the limited protection available under copyright law.

#### *Patent Protection*

Patent protection would cover the inventive concept embodied in the program and thus would grant the greatest protection, but only to the limited number of

46. Banzhaf, *supra* note 40, at 156.

47. *Computers, The Copyright Law and Its Revision*, 20 U. FLA. L. REV. 386, 407 (1968) contains a discussion of a clearing house proposal for use in licensing of copyright material in a manner similar to registration of records by ASCAP. See also AMERICAN PAT. LAW ASS'N. BULL., Sept. 1967, at 418.

48. Titus, *Copyrighting Computer Programs*, 1966 COMMUNICATIONS OF THE ASSOCIATION FOR COMPUTING MACHINERY 879, reports 52 programs as copyrighted in June 1966. The number increased to 100 by Feb. 1969, as reported by the Copyright Office.

49. This aspect of computer marketing has been attacked by both the Justice Department and by IBM's competitors in antitrust suits filed recently; *Computer Market Monopoly Charged to IBM in U.S. Suit*, Washington Evening Star, Jan. 18, 1969, § A, at 3, col. 3; *Computers: Tackling IBM*, TIME, Dec. 20, 1968, at 77. In an unusual action, IBM responded to these suits with a two page advertisement in the Washington Evening Star, Jan. 22, 1969, § A. at 16-17, pointing out the profitability of the industry and its tremendous expansion over the last twenty years.



programs which could satisfy the statutory tests of obviousness, novelty, and adequacy of disclosure.<sup>50</sup> However, even this protection would be denied the programmer by the Patent Office and the President's Commission. The justification for this position, as expressed by the Commission, is that to allow patent claims directed to a process or apparatus would further befuddle an already confused area of law; would overburden the Patent Office, which does not have the necessary classification system or search files; and would not enhance the growth rate of an already booming industry.<sup>51</sup> Clearly these objections, with the possible exception of the last, do not deal with the issue of patentability in terms of the public interest but rather in terms of the ease with which the necessary administrative requirements could be achieved. These considerations are relevant to the discussion of legislative proposals below. The Patent Office would deny protection on the ground that claims directed to a computer program are nonstatutory. This position will now be examined.

After discussing a series of cases<sup>52</sup> in *In re Prater*,<sup>53</sup> the Court of Customs and Patent Appeals held: "[p]atent protection for 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 by the mere fact that the process could alternatively be carried out by mental steps."<sup>54</sup> The *Prater* application dealt with a method of minimizing the errors in calculating the concentrations of constituents in a certain gas mixture. The method utilizes a set of linear equations which is larger in number than the number of constituent gases and thus allows a choice of one of several different subsets of equations in solving the set. The optimum subset is found by selecting the subset of equations which has the largest determinant. The claims were directed both to the method of solution and to the apparatus for carrying out the method. However, the apparatus disclosed in the specification was analog in nature, although the Commissioner's brief points out that the specification did contain the statement that "a digital computer . . . in most instances represents an instrumentality preferred for the carrying out of the method of the present invention."<sup>55</sup>

The rejection of the claims took several forms. Under Sections 101 and 102 of the 1952 Patent Act,<sup>56</sup> the examiner held that the novel part of the claims was unpatentable as being nonstatutory and that the entire claim was therefore unpatentable. He also held that under those sections the claims were unpatentable as reading upon the process of a person performing mental calculations with

50. Patent Act of 1952, 35 U.S.C. §§ 102-03, 112 (1964).

51. REPORT OF THE PRESIDENT'S COMMISSION 13.

52. Cases cited note 24 *supra*.

53. 159 U.S.P.Q. 583 (1968).

54. *Id.* at 593.

55. Brief for Commissioner of Patents at 3.

56. 35 U.S.C. §§ 101-02 (1964).

the assistance of a paper and pencil. The examiner further held that under Sections 101 and 112 a claim which includes nonstatutory matter fails to particularly point out and distinctly claim the invention.<sup>57</sup> The basis for all these rejections was that a process capable of accomplishment by mental steps is not within the statutory category of patentable process.<sup>58</sup> The Board of Appeals affirmed the examiner's decision.

The CCPA, in reversing the Board of Appeals, while not disagreeing that a purely mental process might be nonstatutory, noted that the specification contained a detailed disclosure of a machine for carrying out those mental steps.<sup>59</sup> The court could find nothing in the earlier cases and no legislative intent in the passage of the 1952 Patent Act to support the examiner's conclusion that a process was unpatentable if it could be duplicated by mental steps with the aid of a pencil and paper. Since the *Prater* application contained a minimal disclosure concerning the use of a digital computer, the court seems to have sanctioned the patenting as a computer program of almost any process which can meet the other statutory tests. The court did not reach the question of whether to require a detailed description of the program, for an analog embodiment was disclosed in the application. There is a possibility for abuse in this area if programmers attempt to secure protection for programs covering processes traditionally unpatentable, such as business practices or scientific principles, on the basis of claims directed to a programmed computer. However, in the *Prater* holding, the use of the phrase "directed to an industrial technology" will allow the court in the future to limit patenting of programs which attempt to cover unpatentable subject matter.<sup>60</sup>

Even though programs are now considered patentable by the CCPA, the protection afforded programs cannot be realized without effective means of marketing them. The programmer will not face the same problems of ease of infringement and difficulty of detection as in the case of copyright protection, for he need not publish a complete listing. Nor will the practice of maintaining important programs under trade secret law continue if patent protection is available. However, the software industry is confronted with hardware manufacturers' current practice of including software costs in the total costs of their

57. *In re Prater*, 159 U.S.P.Q. 583, 586-87 (1968).

58. Patent Act of 1952, 35 U.S.C. § 101 (1964).

59. *In re Prater*, 159 U.S.P.Q. 583, 585-90 (1968).

60. While the court sounded decisive in its holding, some doubt must be held for the ultimate outcome of this case. The case was reheard before a court which includes three judges who did not participate in the merits of the original opinion. Judge Baldwin was appointed to fill a vacancy during the period between the original hearing and the decision. Judge Worley joined in an opinion which recognized his present lack of qualification to participate in the merits of the decision. A third judge, who wrote the opinion, died the day it was handed down; Judge McGuire sat by designation to fill this vacancy.

equipment, thus forcing users to employ manufacturer produced system programs.<sup>61</sup> The only open market is in application programs, and even in that market manufacturers have an advantage due to their support of the system programs. The manufacturers defend this tying policy by claiming that the unique nature of each computer system necessitates that the persons best acquainted with the system produce the programming. "If tying is truly necessary, then it is quite unnecessary."<sup>62</sup> If the software houses cannot or do not produce programs which are better than the manufacturers' programs, the user will return to the manufacturers in the future for system programs. With the time lag and quality problems which plague the introduction of new equipment, the users would be in a better bargaining position if they could select an independent competitive source for system support.<sup>63</sup> In addition, if predictions about future technological changes are true,<sup>64</sup> there will be less need of equipment-oriented persons writing the system programs since differences in capability of systems will reside in programming and not equipment.

Hopefully, the future will see the end of the tying of software and hardware costs and the increased patenting of suitable programs. Patenting of programs would insure protection covering both the form and substance of the programmer's ideas. It would encourage the preparation of costlier and more general type programs than are currently being written. It would foster competition in the computer industry by strengthening the software houses. It would also improve the quality of programming and reduce program duplication by insuring that the best programs are disclosed to the public rather than only the inconsequential programs now disclosed under trade secret or copyright law. The industry will benefit from the increased competition and the improved quality of patented programs. The public will benefit from the more effective utilization of computers.

The most significant drawback to patent protection is the time lag between application for and issuance of a patent, which in turn postpones full disclosure of the invention to the public. While delays have been reduced, there is still a

61. This practice is widespread, although at least one hardware manufacturer, Scientific Data Systems, has reportedly separated the equipment package costs from the software. *Look Ahead*, DATAMATION, Dec. 1966, at 17. This practice is under attack by the Justice Department. See note 49 *supra*. If IBM were to stop package sales either voluntarily or involuntarily, the other manufacturers would presumably be forced to follow suit.

62. Bender, *Computer Programs: Should They be Patentable?* 68 COLO. L. REV. 241, 254 (1968).

63. Interestingly enough, one of the largest markets for software houses is subcontracting system programs for hardware manufacturers. More than 25 percent of their 1965 business came from this source. *Software Gets a Hardsell Approach*, BUS. WEEK, Oct. 21, 1967, at 171.

64. Articles cited *supra* note 3.

significant delay when compared to the average life of a computer program. However, life expectancies of programs are expected to increase because of the less revolutionary changes anticipated in hardware and because of improved programming techniques.

There are currently many proposed laws in Congress and also informal proposals by patent and computer personnel which would modify the present law. These proposals will now be considered with respect to their effect upon the patentability of computer programs and their interaction with other proposed changes to the present patent laws.

#### *Proposed Legislation and Program Applications*

During the Ninetieth Congress, five patent reform bills were introduced into the Senate and four into the House; in addition, Senators McClellan and Dirksen have submitted patent reform bills to the Ninety-first Congress.<sup>65</sup> One bill dealing with copyright reform was also introduced into the Senate and House during the Ninetieth Congress.<sup>66</sup> It is believed that the McClellan bill will be the center of reform proposals. All of the bills will be considered, however, because of their differences.

In response to legislative and industrial pressures, the Patent Office has set up unofficial study groups in the Office of Legislative Planning and the Research and Development Sections to examine the computer problem. The Commissioner is expected to officially appoint a commission to study the various aspects of examination, rules and procedures, prior art accumulation, new proposed legislation and other appropriate problem areas. Although the Patent Office can appeal the *Prater* decision if affirmed upon rehearing, the handwriting on the wall is being heeded. Actually, most observers expect a confirmation of the original decision. Hopefully the court will be more definitive and explicit as to the requirements for patentability, although the first decision clearly stated the court's position on the availability of patent protection for computer programs.

The Patent Office is faced with some very basic problems concerning computer programs, and although not insurmountable, they cannot be ignored. Nor can the time factor involved in overcoming these problems be dismissed. The Patent Office must move swiftly to afford the protection given the software in-

65. S. 1246, 91st Cong., 1st Sess. (1969) (McClellan bill); S. 3892, 90th Cong., 2d Sess. (1968) (former McClellan bill); S. 1569, 91st Cong., 1st Sess. (1969) and S. 2597, 90th Cong., 1st Sess. (1967) (American Bar Association bill); H.R. 11447, 90th Cong., 1st Sess. (1967); S. 1691 and H.R. 7454, 90th Cong., 1st Sess. (1967); S. 2164 and H.R. 10006, 90th Cong., 1st Sess. (1967); S. 1042 and H.R. 5924, 90th Cong., 1st Sess. (1967) (Patent Reform bill). All these bills were referred to the Committee on the Judiciary.

66. S. 597 and H.R. 2512, 90th Cong., 1st Sess. (1967).

dustry by the *Prater* decision. Commissioner Brenner has remarked that the Patent Office lacks adequate search files since it has no significant prior art in this area and no effective classification system; in addition, it lacks an adequate examination procedure and competent personnel with experience in this field.<sup>67</sup> Alternative solutions to these problems will be examined in light of the proposed legislation, with emphasis on those proposals which best suit the software industry.

### *Lack of Search Files*

Since the Patent Office has little or no prior art, the two basic alternatives available to offset this deficiency would be a citation period by the public during the pendency of an application, or a prior art gathering period. If the software industry wants immediate protection the prior art gathering period is unacceptable, for the time involved in such an undertaking is prohibitive. Since all applications are kept secret under this procedure, as under present law, the Commissioner would have to specify the type and form of art acceptable to prevent the Patent Office from being deluged with so-called "prior art." Furthermore, under a prior art gathering proposal, any art submitted to the Patent Office is available to the public.<sup>68</sup> The software firms, with some justification, would be unwilling to divulge all their art to the public, especially the art presently being sold or licensed.

On the other hand, a citation of art period would encourage divulgence by the software firms of all their pertinent art because of the *direct* impact upon their interests. A citation of art procedure is based on the premise that an application received by the Patent Office would be published within a short period of time. The software industry has an opportunity to see the program disclosed in the application. If they have done it before, or are presently using the same type of program, it is in their best interests to inform the Patent Office. Since their identity is kept secret along with the art cited, they need not worry about divulging any art to the general public. In fact, the particular software company citing the art may also be trying to obtain a patent on it.

67. See generally statement of Edward J. Brenner, Commissioner of Patents, *Hearings on H.R. 5924, H.R. 13951 and Related Bills Before Subcomm. No. 3, of the House Comm. on the Judiciary*, 90th Cong., 1st Sess., ser. 11, at 37 (1967). See also Brenner, *The Future of Computer Programs in the U.S. Patent Office*, THE LAW OF SOFTWARE B-1 (George Washington University 1968); REPORT OF THE PRESIDENT'S COMMISSION, Recommendation No. IV, 13 (1966).

68. The Patent Office presently maintains a public search room where most of the art in the office is available to the public. Moreover, the public is allowed to search inside the office if given permission by the examiner who uses that art.

### *Citation of Prior Art*

Under the existing laws there is no formal procedure for the citation of art by the public. The report by the President's Commission, which is substantially incorporated into the Patent Reform Bill, states:

The Patent Office shall consider all patents or publications, the pertinency of which is explained in writing, cited against an application any time until six months after the publication which gives notice that the application has been allowed or appealed to the Board of Appeals. If the Patent Office, after the citation period, determines that a claim should not be, or have been, allowed, the applicant shall be notified and given an opportunity *ex parte* both to rebut the determination and to narrow the scope of the claim . . .<sup>69</sup>

The benefits of this proposal to the software industry are significant. Since the application would ordinarily be allowed or appealed from 18 to 24 months after the filing date,<sup>69a</sup> publication would come within a reasonably short time of receipt by the Patent Office. The industry would thus be made aware of any significant advances earlier than under the present system, where applications are pending well over two years before any action is taken. The possibility of all pertinent prior art being considered before the issuance of a patent is also increased, thereby strengthening the presumption of patent validity. The applicant could narrow his claims to avoid the cited art when possible, rather than have the claims held invalid. Since litigation on the validity of claims is very costly, this procedure would prove cheaper to both the applicant and the company citing the art. Furthermore, since this proposal is an *ex parte* procedure, the additional cost to the applicant would not be great. Finally, a company failing to cite art during the specified period would not be precluded from a later challenge to the claims if, for example, it either did not see the published application or were being sued by the patentee for infringement.

Since disclosure to the public would be faster than under the present system, the protection to the applicant should be just as quick. Infringers would be liable during the period between publication and issuance of a patent if the published claim later issues as a claim in the patent (the initial examination procedure and interim liability will be discussed below). This type of procedure shifts the burden to the software industry. If anyone feels he has pertinent prior art he should offer it in such form as to enable the examiner to make a fair decision. He could not submit programs in tape decks, punch cards, etc., that would take too much time to interpret, but should be required to cite evidence of prior art in a uniform matter. The citation procedure, however, should not

69. REPORT OF THE PRESIDENT'S COMMISSION, Recommendation No. XI.

69a. *Id.*, Recommendation No. VII.

exclude the searching of the available prior art, however scarce, the Patent Office now has.

The American Bar Association bill<sup>70</sup> provides for a citation of art period similar to that proposed by the Patent Reform Bill, and H.R. 11447 provides for citation of prior art by third parties at any time during the pendency of an application.<sup>71</sup> The prior art is placed in the file, the identity of the person citing the art is kept secret, and the prior art may or may not be accompanied by a written explanation of pertinency. The other bills continue the existing law. A prior citation of art period was conspicuously omitted from the McClellan bill; however, Section 191 states:

(a) Any person other than the patentee may, within one year *after the issuance of a patent*, notify the Commissioner of publications or patents which may have a bearing on the patentability of any claim of the patent . . . to be reexamined in the light thereof.

(b) If a notification under subsection (a) explains in writing the pertinency to a claim or claims of the patent of the publications or patents cited, the Commissioner shall cause the patent to be reexamined in the light thereof . . . . The patentee may present amended or new claims for such reexamination. No fee shall be charged for such reexamination or any appeal thereon in the Patent Office.

(c) The identity of the person making the notification under subsection (a) or (b) of this section shall be kept in confidence by the Patent Office . . . .<sup>72</sup> (Emphasis added.)

70. S. 1569, 91st Cong., 1st Sess. § 136 (1969). The Patent Reform Bill, S. 1042, 90th Cong., 1st Sess. § 136 (1967), provides:

(a) Any person may at any time notify the Commissioner of patents or publications which may have a bearing on the patentability of a published application, and the Commissioner may cause the application to be examined or reexamined in the light thereof.

(b) If such notification explains in writing the pertinency of the patents or publications cited and is received within three months, or within such longer time as the Commissioner appoints but not more than six months, after publication of the application under section 151 of this title, the citations shall be considered by the Patent Office.

(c) The identity of the person making the citations under subsections (a) or (b) of this section shall be kept in confidence by the Patent Office, and no information concerning the same shall be given without the authority of such person, unless necessary to carry out the provisions of an Act of Congress or in such special circumstances as may be determined by the Commissioner.

71. H.R. 11447, 90th Cong., 1st Sess. § 137(a) (1967). Subsection (b) provides:

Any person demanding examination of an application . . . may notify the Commissioner of any person subject to service of process of any court of the United States who may be in possession of knowledge of prior art pertinent to the patentability of a published and pending application, together with the fee prescribed by law and prepayment of a deposit sufficient to cover the costs, fees and expenses involved, and the Commissioner shall . . . require such person to give evidence by deposition under oath of all such prior art then known to him.

72. S. 1246, 91st Cong., 1st Sess. § 191 (1969).

This provision does not solve the basic problem the Patent Office faces. A presumption of validity should always attach to a patent issued by the Patent Office. With the absence of significant prior art, the issuance of a patent will be no more than a simple registration system, the presumption of validity being almost nonexistent. Searching the small amount of prior art in the Patent Office should not be sufficient to attach this presumption of validity; the McClellan bill affords such a presumption only after one year. Since the period for citation of references lasts for one year after the issuance of the patent, it may be construed as a subsequent citation of prior art proposal. A weaker form of protection issues first, and becomes stronger after one year. The prior citation of art proposal affords a *stronger* form of protection upon issuance of the patent. Both the applicant and the public would benefit from greater reliance placed on the validity of patents. This is particularly true in the case of program patents which otherwise would be issued with no significant prior art on file. Even if a citation of art proposal is based on the premise that it is needed for an interim period, and that only until the Patent Office generates sufficient prior art should it be considered, the proposal seems especially important to the Patent Office's administration of software applications.

If prior art is successfully cited during the one-year subsequent citation period proposed by the McClellan bill, the claim in the patent is cancelled.<sup>73</sup> The President's Commission recommended a three-year "cancellation" procedure in addition to the prior citation of art proposal.<sup>74</sup> A cancellation procedure would benefit the public because there is presently no provision for the Patent Office to cancel any claim in an issued patent; only a court can declare a claim invalid. An invalid claim may continue to be enforced because few are willing to expend the time and money to have a court declare the claim invalid. Cancellation of a claim would also benefit the software owner since he may still have the opportunity to narrow his claims.<sup>75</sup> The Commission also recommended that any party unsuccessfully seeking cancellation of claims be required to pay the patentee's reasonable costs of defending such claims.<sup>76</sup> This would prevent any vexatious litigation or harassment of the patent owner. The Patent

73. *Id.* § 191(d): "Rejection of a claim, on becoming the final judgment in the case, shall constitute cancellation of such claim from the patent . . ."

74. REPORT OF THE PRESIDENT'S COMMISSION, Recommendation No. XV:

The Patent Office, upon receipt of a relatively high fee, shall consider prior art of which it is apprised by a third party, when such prior art is cited and its pertinency explained in writing within a three year period after issuance of a patent. If the Patent Office then determines that a claim should not have been allowed, the patent owner shall be notified and given an opportunity *ex parte* both to rebut the determination and to narrow the scope of the claim. Failure to seek review, or the affirmance of the Patent Office holding, shall result in cancellation of the claim . . .

75. *Ibid.* See also the McClellan bill, S. 1246, 91st Cong., 1st Sess. § 191(b) (1969).

76. REPORT OF THE PRESIDENT'S COMMISSION, Recommendation No. XV.



Reform Bill<sup>77</sup> and H.R. 11447<sup>78</sup> are similar to the Commission's proposals, except H.R. 11447 extends the administrative cancellation period to the life of a patent. The other bills have no provisions as to cancellation.

### *Interim Liability*

Under the citation of art proposal, the application would be published prior to its becoming a patent. This application should be afforded some protection during the publication period if it later becomes a patent.

Liability for infringement under present law begins on the day the patent is issued.<sup>79</sup> The President's Commission recommended interim liability<sup>80</sup> after publication of the application for any claim that appears in both the application and the issued patent. Damages would be recoverable after: (1) initial publication, (2) indication by the Patent Office that the claim is allowable, and (3) actual notice to the alleged infringer indicating how his acts constitute an infringement. This provision gives the patent owner an election. If he does elect interim liability, actual notice to the infringer constitutes the grant of a "reasonable royalty, non-exclusive license" extending only until the patent issues, if involving a *process*, and beyond the issuance for any infringement involving "a machine, manufacture or composition of matter" made before the patent issues.<sup>81</sup> Treble damages may be given in unusual and exceptional cases. Since computer programs are *processes*, this provision gives the software industry a great advantage—the applicant need not give a license after the patent issues, but may collect the royalty up to the time the patent issues and then force the infringer to stop using the patented process.

Interim liability should be desired by the software firms because of the nature of the industry. If this recommendation is not adopted in conjunction with the citation proposal, "anyone could copy the [program] and make, use or sell it until a patent is issued, possibly even exhausting its commercial value."<sup>82</sup> The industry is also benefitted because the extent of possible liability can clearly be seen by the publication of the application. Since a claim is only infringed during the interim period when it appears in both the application and the patent, the applicant is encouraged to present claims he considers patentable. Because the patentee can elect to use the interim liability proposal or proceed with present available remedies (injunction and/or damages), a valuable choice is given to him.

77. S. 1042 and H.R. 5924, 90th Cong., 1st Sess. § 257(d) (1967).

78. H.R. 11447, 90th Cong., 1st Sess. § 257 (1967).

79. Patent Act of 1952, 35 U.S.C. § 271 (1964).

80. REPORT OF THE PRESIDENT'S COMMISSION, Recommendation No. XVII.

81. *Ibid.*

82. REPORT OF THE PRESIDENT'S COMMISSION 36.

The Patent Reform Bill<sup>83</sup> adopts a similar proposal but contains no specific provision for treble damages during interim infringement. It allows a reasonable royalty during the interim period, but no injunction or other relief is available regarding "subsequent use or sale of machines, manufactures or compositions of matter made prior to the grant of the patent . . ."<sup>84</sup> Subsequent use of a *process* is thus considered infringement, and since programs are processes, damages and/or injunctions may be obtained by a software applicant if he so elects. The American Bar Association bill<sup>85</sup> and H.R. 11447<sup>86</sup> are quite similar to the Patent Reform Bill in this respect. The remaining bills have no provisions as to interim liability. Since there is no publication-citation of art period in the McClellan bill, interim liability is not included. This is certainly a deficiency, from the computer software houses' point of view. The software industry should urge incorporation of both a publication-citation of art period and an interim liability provision in the McClellan bill by amendment.

#### *Public Use Proceedings*

The President's Commission also proposed "public use" proceedings during the citation of art period.<sup>87</sup> These proceedings are presently available during the pendency of an application.<sup>88</sup> However, since the application is kept secret, access to these proceedings is restricted to persons who have reason to believe an application is pending. The Patent Reform Bill would allow such proceedings not more than six months after the application is published.<sup>89</sup> If the invention were used or put on sale prior to the filing of the application, no patent could be granted. If the inventor did not himself invent the subject matter in the application, no patent would issue. The American Bar Association bill is similar to the Patent Reform Bill except it would also provide for such proceedings where the invention was made by another who did not "abandon, suppress or conceal it."<sup>90</sup> The other bills preserve existing law. The McClellan bill, which does not contain a prior citation of art period, would allow public use proceedings within one year of issuance of the patent,<sup>91</sup> thus providing the software

83. S. 1042 and H.R. 5924, 90th Cong., 1st Sess. § 273 (1967).

84. *Id.* § 273(c).

85. S. 1569, 91st Cong., 1st Sess. §§ 271(f), 283(b), 284(b) (1969).

86. H.R. 11447, 90th Cong., 1st Sess. §§ 271(e), 283(b), 284(b) (1967).

87. REPORT OF THE PRESIDENT'S COMMISSION, Recommendation No. XI.

88. *See* Patent Act of 1952, 35 U.S.C. § 102 (1964). *See also* Rule 292, 37 C.F.R. § 1.292 (1967).

89. S. 1042 and H.R. 5924, 90th Cong., 1st Sess. § 136(d) (1967).

90. S. 1569, 91st Cong., 1st Sess. § 136(d)(3) (1969).

91. S. 1246, 91st Cong., 1st Sess. § 192 (1969). The section continues: "(b) If such person within the time specified above makes a prima facie showing and offers to present evidence in support of such showing, the matter shall be determined by the Board of Appeals, on notice to the patentee with opportunity for the presentation of evidence and hearing, in such proceedings as the Commissioner shall establish."

industry with a valuable defensive tool. If a software firm is sued for infringing a program patent and can prove that its product was on sale or in use more than one year prior to filing an application, then it is relieved of liability. Public use proceedings after the issuance of a patent can also serve as an offensive tool to cancel a patent.

### *The Patent Office's Administration of Program Applications*

If a citation of art period and initial publication proposal is adopted, it is submitted that very little Patent Office procedure concerning applications for computer programs would have to be changed. A specification for a program should contain a complete description of the problem the applicant is trying to solve, together with the proposed solution. In addition to the written solution there should be a flow chart adequately describing the process and enabling one skilled in the art to use it. The flow chart would be analogous to the present drawing requirements. It should not be so broad as to be worthless nor so complicated and lengthy as a program listing.

Obviously, the specification must conclude with one or more claims, in accordance with the present patent laws. It is believed that claims directed to the key algorithm or algorithms would be sufficient for coverage, for the novel aspects of the program are embodied in the algorithm, and since the applicant bases novelty upon it he should define his claims in that manner. The Patent Office has stated that algorithms "are conclusions based upon a precise or mathematical premise and line of reasoning,"<sup>92</sup> and that "a process carried out by a programmed apparatus is . . . non-statutory where the process as claimed merely states the algorithm . . ."<sup>93</sup> However, this definition can be countered with the argument that

[t]here are very few, if any inventions, apparatus or method, mechanical, electrical or chemical, which cannot be said to be "characterized by" a conclusion "based upon a precise or mathematical premise and line of reasoning." Since an invention is no more than the implementation of an inventor's intellectual conception, and since conception is no more than the conclusion that desirable results will follow if the precise structure, steps or combinations thereof are observed, then an algorithm," as defined by the Patent Office guidelines, can be said to be no more than the human element in all invention.

An algorithm, more properly speaking, is a sequence of adequately defined steps which lead to a desired result. It is essentially a method

92. 829 OFFICIAL GAZETTE OF THE U.S. PATENT OFFICE, Aug. 2, 1966, at 1.

93. *Id.* at 2.

or process, and patentability must be determined by the subject matter actually involved, not the mere fact that the process is "logical."<sup>94</sup>

Some proposals being discussed now would require a copy of the program listing in the application,<sup>95</sup> but such a requirement is totally unwarranted and unnecessary under the present or proposed laws. The "listing" is the actual program and may be referred to as the "know how," which also might include tapes, punch cards and instructions. Requiring a program listing does have some benefits. Since everything is published, improvement upon the basic invention would be easier, since it would be unnecessary to obtain a working program first. Debugging can take months. Although a skilled programmer could reduce the application to a working program, it still takes time, money and effort. Dr. Leon Davidson has pointed out an additional problem arising if listing is not required:

Assume that one is not required to claim or prove implementation and operability, before filing for a patent. An algorithm may exist, or fully detailed low-level flowcharts may be prepared, but no coding or simulation may have been undertaken. If one can protect and lock up ideas at this stage of development, without spending the money to get them to actually work, then patent applications would be churned up in large numbers by opportunists seeking to sew everything up for future killings.<sup>96</sup>

Publishing this information, however, would invite infringement since it discloses everything anyone would ever need to infringe. This information is the lever which the patentee must use to license, and must be kept secret. Since infringement is virtually costless and effortless once the listing is divulged, it becomes an undue burden upon the applicant to enforce his right under the patent. Because of the difficulty of detection, the unscrupulous would risk infringement, especially since program development costs can run into millions of dollars. A software patentee thus would be left without adequate protection, for many software firms may not have the manpower or the money to police their patents.

Under a two-part application proposal, the program listing would be considered the "secret" part. The public part would describe the algorithms in-

94. Bell Telephone Laboratories, Inc., Comments on Guidelines to Examination of Programs, Sept. 20, 1966, at 4 (submitted by R. O. Nimtz).

95. See, e.g., Davidson, *Practical Considerations in Program Patentability*, COMPUTERS AND AUTOMATION, May 1968, at 13: "It is important to insist that it should not be possible to patent something which has not been implemented and published . . . in runnable form."

96. *Ibid.*

volved, the scope of protection and the basic knowledge needed to "spur the inventive efforts of others."<sup>97</sup> The Commissioner has stated that the secret part would be a description of "know-how,"<sup>98</sup> *i.e.*, the invention actually reduced to practice. Since present law requires only constructive reduction to practice, software applicants would be asked for more than that now necessary. Section 112 of the patent statute merely requires the specification to be worded so as to enable one skilled in the art to make or use the invention.<sup>99</sup> The Patent Office does not test inventions for operability; the entire system is based on the premise that the application contains sufficient disclosure of the invention so that one skilled in the art can make or use it. Requiring the applicant to submit an entire working program (tapes, cards, printouts, etc.) would be unfair and burdensome. Surely it cannot be printed, for many programs contain thousands of separate orders or steps. Persons urging this two-part application contend it is no more than a requirement for an actual showing of utility, required for items such as pharmaceuticals. But such a utility requirement is now in the law under Section 101.<sup>100</sup> In addition, the complete "know how" information would not be disclosed in such composition patents as it would be if the program listing is published.

Disclosure sufficient for one of ordinary skill in the art to make or use the invention meets the statutory requirement. If a prospective licensee desires a license under a patent and the patent proves to disclose an inoperable invention, there is a failure of consideration and termination of the agreement. The licensee would not be required to pay royalties for a useless program. Requiring total disclosure by listing may, in effect, result in a withholding of the inventive concept from the public until such a listing is perfected. This delay is not justified under present laws. If the constitutional basis for granting a limited monopoly is "[t]o promote the Progress of Science and useful Arts,"<sup>101</sup> then any requirement that withholds such information is not in keeping with the constitutional objective. The software industry should thus reject the requirement for a program listing. One of ordinary skill in programming could implement the algorithm and obtain a suitable program.

97. Brenner, *The Future of Computer Programs in United States Patent Office*, *THE LAW OF SOFTWARE*, at B-17 (George Washington University 1968).

98. *Ibid.*

99. Patent Act of 1952, 35 U.S.C. § 112 (1964): "The specification 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 . . . ."

100. *Id.* § 101: "[w]hoever invents or discovers any new and *useful* . . . composition of matter . . . may obtain a patent therefor . . . ." (Emphasis added.)

101. U.S. CONST. art. I, § 8.

### *Examination*

If the citation of art period is adopted, the Patent Office should publish the application after an initial examination. This would cover all Section 112 matters, such as adequacy of disclosure and scope of claims,<sup>102</sup> as well as matters concerning compliance with the Rules of Procedure. Any controversy remaining after the applicant's response to the examiner's initial rejection could be published upon the application. This would be sufficient notice to all, including prospective licensees, as to the controversy between the applicant and the Patent Office. The controversy should be resolved during a full examination procedure with the right to appeal preserved as it is under present law.<sup>103</sup> This would effect an immediate publication of the application and benefit the public faster than if the initial controversies had to be resolved prior to publication. After the citation period is over, the examiner would judge the application on its merits according to either present law or whatever new proposal is enacted. He should consider all prior art uncovered by his search and any cited art. Any initial determination made by the examiner as to patentability based upon submitted prior art should not be reviewable as between the examiner and the public. Of course, all avenues of appeal should remain open to the applicant and the Patent Office. The examiner should be able to request the public to clarify its position, thus enabling him to more effectively examine the application.

Most of the discussion in this whole area has been on a patentable vs. unpatentable basis. Some fail to realize the pressing problems facing the Patent Office. Examiners who are experienced in the field must be hired and trained. Retraining and education of present examiners in the local universities may be necessary. Since there are well over ninety programming languages, any requirement for an actual listing should be made in some basic language in addition to the preferred one. One can appreciate the fact that examiners could not possibly learn or keep up with all the different programming language being generated. Of course, if no such listing is required and only the algorithms define the invention, knowledge of many languages is not necessary. Finally, the Patent Office not only must substantially train examiners, but also must compete with private industry for the services of skilled personnel.

### *Conclusion*

Patent protection for computer programs is both desirable and now available. It is desirable because it will "promote the useful arts" while providing protection for the intellectual achievement of the programmer rather than the mere

102. Patent Act of 1952, 35 U.S.C. § 112 (1964).

103. *Id.* § 134.

form of expression. It is available because of the *Prater* decision and because proposed legislation which would have excluded programs did not pass the Ninetieth Congress.<sup>104</sup> However, patent protection for computer programs will not achieve the maximum possible benefits for either the software industry or the public unless the issued patents are both valid and enforceable. Present limitations on the capability of the Patent Office to examine program applications also limit the industry's ability to utilize effectively available patent protection. Solving the problems confronting the Patent Office, either by legislative or administrative action, will benefit the individual software applicant by affording effective, enforceable patent protection. It will assist the industry in utilizing available programming manpower most effectively and producing improved quality programs. The public will benefit from more effective utilization of the computer, a tool whose potential has not yet been fully tapped.<sup>105</sup> The software industry thus should urge that measures to assist the Patent Office in solving its problems in the area be included in any patent reform legislation.

The best solution to the lack of adequate prior art problem is the citation of prior art proposal, which would initially shift the burden of searching prior art to the software industry. Although the search effort would gradually shift back to the Patent Office, experience gained during the citation period may indicate that it would be desirable to extend the citation proposal to all patents. A citation period for the software industry could therefore be a test case for the controversial proposal of a citation period for all prior art. The various legislative proposals for this citation of art period are quite similar, and the time period involved is really arbitrary; whether the public were allowed to cite art for either three or six months after the publication of any application, there would be no problem. Identity of the entity citing the art should be kept secret. The applicant might then amend his claims and the issued patent would have a high probability of validity. The McClellan bill is deficient to the extent that it omits such a procedure. Although it does allow the public to notify the Patent Office of prior art which may effect the patentability of the claims, the patent will have issued upon the search of inadequate art, and the presumption of validity will be weak. The Patent Reform Bill and H.R. 11447 also provide for cancellation procedure after the patent issues. Either would be acceptable.

Interim liability should be compulsory if a citation of art period and initial publication procedure are enacted. The important feature of any interim liability scheme should be that described by the President's Commission: a reasonable royalty plus the right to injunction and/or damages if infringement continues after the issuance of a patent on a computer program. The Patent Re-

104. S. 1042 and H.R. 5924, 90th Cong., 1st Sess. § 106 (1967).

105. See Diebold, *Bad decisions in computers use*, HARV. BUS. REV., Jan.-Feb. 1969, at 14; Dean, *The computer comes of age*, HARV. BUS. REV., Jan.-Feb. 1968, at 83.

form Bill, American Bar Association proposal, and H.R. 11447 all provide similarly. The McClellan bill has no interim liability period because it does not provide for citation of art or publication of the application.

Prior use proceedings, valid defense measures contained in the present law, should be continued in any proposed reform. Such proceedings parallel the citation of art proposal and allow the public to show prior public use as well as prior publication of the program. All proposed bills contain acceptable provisions for these proceedings.

The software industry should take the position that since program listing is not required under existing law, it would be an undue burden upon that industry to require it as a prerequisite to patentability. However, a flowchart of the program should be required which, in combination with the disclosure, would enable one skilled in the art to prepare the program. The type of disclosure contained in the *Prater* application should be viewed as insufficient, at least when an analog embodiment of the program is not disclosed. To hold otherwise would allow early filing of programs before there is even any indication that a workable program can be produced.

Although the software industry has exhibited tremendous economic growth over the last two decades without patent protection, it has suffered from scarcity of programmers and low quality of programming. If the *Prater* decision is affirmed upon rehearing and appropriate administrative and legislative assistance is given to the Patent Office, it will be interesting to follow the further growth of this industry with its newly-won patent protection.

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