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## Software Patents--Just Make a Good Thing Better

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# SOFTWARE PATENTS—JUST MAKE A GOOD THING BETTER†

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## I. INTRODUCTION

In recent years, the number of software-related patents<sup>1</sup> sought from and issued by the United States Patent and Trademark Office (the Patent Office) has rapidly increased.<sup>2</sup> Furthermore, recent actions and decisions

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† Originally submitted as a position paper for an online panel discussion.

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1. The term “software” is used somewhat differently by various authors. However, for purposes of this paper, software is defined to be computer programs. A program can be thought of as the intelligence or control logic communicated to a computer in order to enable the computer to perform a particular function. Typically, a computer program is prepared to solve a problem or to automate a mundane or complex task (i.e., to “teach” a general purpose machine to perform a particular desired function). Initially, specific methods for solving the problem are fashioned in a “logic” or “algorithm” stage. A block diagram “flowchart” may be prepared. The program is then written in a “coding” stage. This typically results in a sequence of instructions in a rigidly defined language which may have a resemblance to English. This is a “source program” which must be translated into an “object program” which is a sequence of “bits” (i.e., zeros and ones) that the computer understands. Consequently, a program is a set of instructions which embodies the logic or algorithm used to solve the initial problem.

The fact that there is a functional equivalence between hardware and software is important to an understanding of software-related patents. That is, technology has blurred the distinction between hardware (wired circuits) and software (program) solutions to the same problem such that there is generally a functional equivalence between a program executed by a computer and a wired electrical and/or electronic logic circuit. This fact was effectively brought out by one of the witnesses during the 1994 Software Patent Hearings. *See infra* note 5.

A software-related patent is defined herein as a patent that claims some feature, function, or process embodied in a program that is executed on a computer as a substantially significant portion of its invention. *See, e.g.*, John P. Sumner & Steven W. Lundberg, *The Versatility of Software Patent Protection: From Subroutines to Look and Feel*, THE COMPUTER LAWYER, June 1986, at 1.

2. Classes 364 and 395 are generally acknowledged to be those in which the Patent Office classifies most software-related patents. Class 395 was created in 1991 and replaced selected art areas of Class 364. The creation of Class 395 seems to at least partially remove one reason that the Supreme Court relied upon in denying patent protection for the software-

by the Patent Office and the Court of Appeals for the Federal Circuit suggest a trend toward increasing the eligibility of software-based innovations for protection under U.S. patent laws.<sup>3</sup> At the same time, a number of court decisions have cut back the scope of protection available for software under the copyright laws.<sup>4</sup>

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related invention it reviewed—the Patent Office’s lack of a reliable classification system. See *Gottschalk v. Benson*, 409 U.S. 63, 72 (1972). It is difficult to determine how many of the patents granted in these classes cover software inventions because the classes include other types of inventions as well. However, 3,270 and 1,174 patents were sought and issued, respectively, in class 364 in 1987. This is to be contrasted with 11,714 and 4,199 patents sought and issued, respectively, in combined Classes 364 and 395 in 1995. This data was obtained by the author on November 13, 1995 from Gerald Goldberg, a Group Art Unit Director at the Patent Office.

3. On June 1, 1995 the Patent Office released proposed new examination guidelines for evaluating the patentability of computer-related inventions. PAT. TRADEMARK & COPYRIGHT J. (BNA) No. 50, at 149 (1995). The Patent Office’s proposed examination guidelines are intended to assist examiners in their review of applications for software-related inventions. Although the guidelines do not have the status of rules, they govern the Patent Office’s internal examination policies. These come in the wake of the Patent Office’s recent decision to reverse its own ruling in *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995), on the patentability of software embodied on a floppy disk. Moreover, the proposed guidelines and the Federal Circuit’s en banc decision at 60 F.3d 807 (Fed. Cir. 1995), to vacate its prior panel decision in *In re Trovato*, 42 F.3d 1376 (Fed. Cir. 1995), and reconsider the case in light of *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (en banc), indicate that court’s willingness to extend patent coverage to software-related inventions.

4. *Gates Rubber Co. v. Bando Chem. Indus.*, 9 F.3d 823 (10th Cir. 1993) (unprotectable elements of a copyrighted computer program were not sufficiently filtered out by the district court in its finding of infringement). In *Gates*, the court adopted the abstraction-filtration-comparison test under *Computer Associate International v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992). This test is more restricted in determining “substantial similarity” in copyright infringement controversies than the “one idea” approach of *Whelan Associates v. Jaslow Dental Laboratories, Inc.*, 797 F.2d 1222 (3d Cir. 1986). Two federal appellate courts recently stated that intermediate copying of computer software for reverse engineering may be “fair use” as long as the copying is not more than necessary to understand the unprotected ideas of the work. *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992); *Atari Games Corp. v. Nintendo of Am., Inc.*, 975 F.2d 832 (Fed. Cir. 1992). In addition, the First Circuit recently overturned Judge Keeton’s decision of infringement in *Lotus Development Corp. v. Borland International*, 49 F.3d 807 (1st Cir. 1995). The court ruled that Borland’s Quattro Pro spreadsheet could not infringe Lotus’ copyright on its popular 1-2-3 spreadsheet by copying its menu command hierarchy because Lotus’s menu tree was a “method of operation” and, as such, was “uncopyrightable subject matter.” Lotus, now a unit of IBM, had argued that the order of menu commands represented a creative decision by a programmer that was copyrightable. As reported in the January 17, 1996 issue of *The Wall Street Journal*, the Supreme Court, on January 16, 1996, split 4-4 with Justice Stevens abstaining, thereby affirming the appellate decision.

The “virtual identity standard” was the standard adopted by the Ninth Circuit with respect to Apple Computer’s graphical interface. The court refused to view the work as a whole and apply the “total concept and feel” standard. *Apple Computer, Inc. v. Microsoft Corp.*, 35 F.3d 1435 (9th Cir. 1994). The court held that Apple was entitled to “thin” protection only in view of the large proportion of the interface that was licensed and the limited number of ways that the interface could be expressed.

These developments have raised concerns of many in the software business,<sup>5</sup> especially small and medium sized businesses, who have relied upon copyright and trade secret protection to the exclusion of patents for their software products.<sup>6</sup> Some have stated that software is somehow “different” from other technologies and must be treated differently.<sup>7</sup> Others have gone so far as to advocate the abolition of patents for software-related technologies.<sup>8</sup>

I disagree with both propositions. I believe a heavy burden rests on those who advocate that a particular field of technology should be exempted from the patent system absent a statutory prohibition.<sup>9</sup> Software-related technology should be treated under the U.S. patent laws as any other technology would be treated. Otherwise, investment in the software industry will be negatively impacted. The current patent system is

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5. David R. Syrowik & Roland J. Cole, *The Software Patent Institute and the Challenge of Software-Related Patents*, 73 MICH. B.J. 544, 547 (1994); *U.S. Patent and Trademark Office, Public Hearing on Patent Protection for Software-Related Inventions* (San Jose, Cal. Jan. 26-27, 1994 and Arlington, Va. Feb. 10-11, 1994).

6. Until 1981, the Patent Office routinely fought the issuance of such patents. Until that time, Supreme Court decisions cast considerable doubt over the statutory authority for the patentability of software. *Gottschalk v. Benson*, 409 U.S. 63 (1972); *Parker v. Flook*, 437 U.S. 584 (1978). Consequently, the public and even most patent attorneys held the view that software was not patentable. Trade secret and, later, copyright protection were generally recognized as tried and true forms for protecting one's software. *Com-Share, Inc. v. Computer Complex, Inc.*, 338 F. Supp. 1229 (E.D. Mich. 1971), *aff'd*, 458 F.2d 1341 (6th Cir. 1972) (“Unique engineering, logic and coherence” of the computer program protected); *Telex Corp. v. IBM Corp.*, 510 F.2d 894, 911 (10th Cir. 1975); Computer Software Copyright Act of 1980, amending 17 U.S.C. §§ 101, 117; *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240 (3d Cir. 1983) (computer programs protectable under the copyright laws whether in source or object form, whether an application or operating system program, or whether stored in ROM or other media). The U.S. Supreme Court's 1981 opinion, *Diamond v. Diehr*, 450 U.S. 175 (1981), opened the gates for patent protection for computer software. Because so many previously relied on trade secret law to protect their software technology, there is a lack of a comprehensive patent database for examiners to search. This has been one of the primary criticisms against the patentability of software-related inventions. It is believed that this will change as the software industry becomes more aware of the value and applicability of patents and the patent database continues to expand.

7. *See* ADVISORY COMMISSION ON PATENT LAW REFORM, A REPORT TO THE SECRETARY OF COM., BACKGROUND AND MANDATE OF THE ADVISORY COMMISSION ON PATENT LAW REFORM 5 (August 1992); THE OFFICE OF TECHNOLOGY ASSESSMENT, FINDING A BALANCE: COMPUTER SOFTWARE, INTELLECTUAL PROPERTY, AND THE CHALLENGE OF TECHNOLOGICAL CHANGE (1992).

8. THE LEAGUE FOR PROGRAMMING FREEDOM, VIEWPOINT: AGAINST SOFTWARE PATENTS, COMMUNICATIONS OF THE ASSOCIATION FOR COMPUTING MACHINERY (1992).

9. Professor Chisum has argued that the case *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), wherein the Court refused to speculate as to the policy implications of the patent system to cover new technologies, supports the position that the burden of proof on the excludability of algorithms such as software algorithms in a judicial or administrative forum should rest with the side seeking such exclusion. Donald S. Chisum, *The Patentability of Algorithms*, 47 U. PITT. L. REV. 959, 1011 (1986).

vital to the protection of software-related technology and, consequently, to United States industrial competitiveness. Criticism of software-related patents is being addressed by those seeking to improve the patenting process and, over time, will be moot.

## II. DIFFERENT OR UNUSUAL ASPECTS OF A COMPUTER PROGRAM

One reason why computer programs are unusual is that they are so pervasive in our lives, in our jobs, and in all types of technology. Computer programs include not only individual software products, such as word processors and spreadsheets, but also software that controls relatively complex manufacturing systems, telephone networks, CAT scanners, and space shuttles, in addition to embedded software that controls engines, antilock braking and traction control systems, and microwave ovens. Indeed, any place a microprocessor can go (almost anywhere), software follows. Advances in microprocessor technology continue to weave computers into the fabric of daily life to the point where they are indistinguishable from it. Consequently, software-related technology is included in most consumer and industrial products amenable to electronic control.

## III. THE ECONOMICS OF SOFTWARE AND SOFTWARE PATENTS

The software industry is one of the fastest growing industries in the United States economy today.<sup>10</sup> A representative from the Intellectual Property Owners, Inc. (IPO) testified during the 1994 Software Patent Hearings that the revenue for computer-related devices, or the software component of these devices, and systems controlled by software “well exceeds a hundred billion dollars a year.”<sup>11</sup> Furthermore, most software research and development is very expensive. Among the top one hun-

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10. The Patent Office reports that over the past decade, the computer software industry has evolved into a critical component of the U.S. economy. It is presently the fastest growing industry in the United States, with 1992 sales in the three core elements of the software industry—programming services, prepackaged software, and computer integrated design—accounting for over \$36.7 billion of our gross domestic product. The software industry also has created jobs at a remarkable rate. Since 1987, employment in the software industry has risen at an annual rate of 6.6 percent, and today, the industry employs about 4 percent of the American work force. Notice of Hearings on Software Patent Issues, 58 Fed. Reg. 66,347 (1993).

11. *U.S. Patent and Trademark Office, Public Hearing on Patent Protection for Software-Related Inventions* (San Jose, Cal. Jan. 26–27, 1994 and Arlington, Va. Feb. 10–11, 1994).

dred packaged software companies, it is estimated that an average of 17% of revenue supports continued R&D.<sup>12</sup>

The importance of protecting this investment in software was underscored later in the IPO representative's testimony: "[I]nvestors seeking to sponsor a start-up organization or a new enterprise within a larger company would like to have some certitude about what it is that they can hope to have some protection for and how their investments can be protected."<sup>13</sup>

Investors typically prefer patents over trade secrets because trade secret protection is lost after disclosure of the secret to the public.<sup>14</sup> Increasingly, many businesses cannot keep their trade secrets secret because of weakened bonds of loyalty between employees and employers and because of the ability of computer technology to widely disseminate data.<sup>15</sup>

Because of the increasingly global market for software products, U.S. software developers have a significant and growing interest in protecting the fruits of their intellectual efforts and monetary investments both at home and abroad. Foreign software patents are particularly important due to the inherent limitations of the protection afforded computer software by foreign copyright and trade secret law.<sup>16</sup>

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12. *Id.*

13. *Id.*

14. *Sheets v. Yamaha Motors Corp.*, 849 F.2d 179, 183-84 (5th Cir. 1988) (disclosure of a trade secret to persons who have no obligation of confidentiality "extinguishes the property right in the trade secret").

15. Milo Geyelin, *Why Many Businesses Can't Keep Their Secrets*, WALL ST. J., Nov. 20, 1995, at B1 (companies are increasingly putting their information on computer databases that can be tapped by unauthorized access from within and without the company).

16. While most of the major industrial countries and many of the developing countries have amended their copyright laws and regulations to protect software, such laws and regulations follow the traditional copyright law principles of the U.S. which do not protect functional aspects of technology but rather only the original expression of ideas like other literary works. The 1976 Copyright Act states that, "In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work." Pub. L. No. 94-553, 90 Stat. 2544 (codified as amended at 17 U.S.C. § 102(b) (1995)).

Most of the major industrial countries do not have a homogeneous body of trade secret law such as that which exists in the United States. Consequently, trade secret or similar protection is not as predictable in those countries as patent law or even copyright law.

Both copyright and patent protection are primarily a matter of national law; neither an "international copyright" nor an "international patent" exists. However, a long history of treaties and conventions have bound a substantial number of countries together—including the major industrial nations—to create an internationally recognized regime of international copyright and patent protection. No such treaties exist with respect to trade secrets. These treaties and conventions do not create protection themselves, but rather accord the same protection for foreigners as that provided by each nation's domestic laws. In other words, if

In testimony at the 1994 Software Patent Hearings, Microsoft put its money where its mouth was by supporting software patents despite the fact that it was engaged in software patent infringement litigation that resulted in a multi-million dollar jury verdict against it.<sup>17</sup>

#### IV. PATENTS AND THE U.S. PATENT SYSTEM—AN OVERVIEW

A patent is a grant formalized by an official document issued by the U.S. Government.<sup>18</sup> By law, a patent has the attributes of personal property.<sup>19</sup> The patent system has constitutional roots and is intended to promote the advancement of science and the useful arts.<sup>20</sup> This ad-

the domestic law of a nation does not provide a software developer adequate protection, a treaty will not remedy the situation.

With respect to copyright, the United States is a member of the Berne Convention and the Universal Copyright Convention. The Berne Convention protects "literary and artistic works" and does not specifically protect computer programs and databases. However, as the United States protects computer programs as literary works in its copyright law, computer programs are granted protection under the Berne Convention in the United States.

The most important international treaty affecting patent rights is the Paris Convention for the Protection of Industrial Property (Paris Convention), which originally came into being as a result of a treaty signed in Paris in 1883. More than one hundred nations are signatories to the Paris Convention, which provides that all participating nations must grant citizens of other signatories to the Convention the same patent protection granted to their own citizens. David R. Syrowik, *International Software Protection*, 70 MICH. B.J. 656, 656-57 (1991).

17. *Stac Elecs. v. Microsoft Corp.*, No. 93-00413 (C.D. Cal., Jan. 23, 1994). A federal jury in Los Angeles awarded Stac Electronics \$120 million dollars when it found that Microsoft had infringed Stac's data compression software patents. At the hearings, the Microsoft representative stated:

The U.S. software industry has experienced quite remarkable growth. Measured over the past ten years, it is the fastest growing industry in this country by any rational measurement: it is now larger than all but four or five industries in this country's economy. The growth has been fueled by strong export performance by U.S. companies: 75% of the world's sales of pre-packaged [sic] software come from U.S. software companies, and the 100 largest American software companies earn more than 50% of their revenues from offshore sales.

The key to much of this is strong intellectual property protection, which we and our colleagues and competitors in the industry view as essential for the U.S. software industry to continue to compete globally and continue to play a leadership role in this nation's economy.

18 J. THOMAS MCCARTHY, MCCARTHY'S DESK ENCYCLOPEDIA OF INTELLECTUAL PROPERTY (2d ed. 1984).

19. 35 U.S.C. § 261 (1984).

20. U.S. CONST. art. I, § 8, cl. 2 ("The Congress shall have power . . . To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."); *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 480 (1974).

vancement is promoted by granting limited exclusive rights to inventors in return for public disclosure of inventions.

As noted at the 1994 Software Patent Hearings, many companies and universities would not be willing to publish technical articles if they could not concurrently file patent applications to ensure that publication of such articles does not compromise the value of any invention described therein.<sup>21</sup> Moreover, public disclosure through issued patents and published technical articles encourages scientific and technological advancement.<sup>22</sup>

Patents are granted for processes, machines, articles of manufacture, compositions of matter, and improvements thereof.<sup>23</sup> Mathematical algorithms and formulae as such cannot be patented because they are expressions of laws of nature or science which the Patent Act excludes.<sup>24</sup> For example, Einstein could not have patented  $E=mc^2$ .

Patents are granted for a twenty-year term from the date a patent application is filed with the Patent Office,<sup>25</sup> during which time the patented invention may be licensed,<sup>26</sup> publicly disclosed, or distributed without jeopardizing its legal protection. The owner of a patent has the right to exclude others from making, using, offering to sell, or selling the patented invention in the U.S., its possessions, and territories.<sup>27</sup> This

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21. U.S. Patent and Trademark Office, *Public Hearing on Patent Protection for Software-Related Inventions*, (San Jose, Cal. Jan. 26-27, 1994 and Arlington, Va. Feb. 10-11, 1994).

22. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150-51 (1989).

23. 35 U.S.C. § 101 (1984) ("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."). Inventions may be patented only if they fall within one of the four statutory classes of subject matter of 35 U.S.C. § 101: "[P]rocess, machine, manufacture, or composition of matter . . . ." *See Kewanee Oil*, 416 U.S. at 483. *See also* 35 U.S.C. § 100(b) (1984) (further defining the "process" statutory class as meaning "[p]rocess, art or method . . . includ[ing] a new use of a known process, machine, manufacture, composition of matter, or material[s]"). Legislative history indicates that Congress contemplated that the subject matter provisions be given a broad construction and were intended to "include anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

24. *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972).

25. Uruguay Round Agreements Act, Pub. L. No. 103-465 § 532(a)(1), 108 Stat. 4983, 4990 (1994) (codified as amended at 35 U.S.C. § 154(a) (1984 & Supp. 1995)) enacted in December 1994, changes the patent term of seventeen years from issue previously provided by 35 U.S.C. § 154 (1984). This should moot some of the criticism that "submarine" patents are being issued by the Patent Office long after they have been filed, unbeknownst to others who have made significant investments in technology in which they did not realize a patent existed.

26. *U.S. Indus., Inc. v. Camco, Inc.*, 277 F.2d 292, 294 (5th Cir. 1960).

27. *See* 35 U.S.C. § 100(c) (1984); 35 U.S.C. § 154 (1995); 35 U.S.C. § 271(a) (1984). A patent is not a grant of a right to make, use, or sell. *Atlas Powder Co. v. E.I. du Pont De Nemours & Co.*, 750 F.2d 1569, 1580 (Fed. Cir. 1984) (owner of improvement patent can be liable for infringing upon the claims of a basic patent). Uruguay Round Agreements Act,



right is enforceable against those who reverse engineer<sup>28</sup> or independently develop the patented invention.<sup>29</sup> Unlike a copyright owner, the patent owner need not show that an invention was “copied” or acquired through some improper access or means in order to prove infringement.

The patented invention is defined by the “claims” (i.e., the numbered paragraphs) appearing at the end of the patent document.<sup>30</sup> A claim defines the boundaries of an invention much like the description of property in a deed defines the boundaries of real estate. To determine precisely the “metes and bounds” of a patented invention, however, the patent specification, drawings, file history, and “prior art” must also be reviewed and analyzed.<sup>31</sup> This distinctive claiming feature of patents, as opposed to copyrights, provides an indication to others of what they can do to avoid infringing the patent while, at the same time, producing an improved product. Too often, antipatent comments are improperly based on the title or, at best, the abstract of an issued patent and not the claims of the patent which actually define the invention.

The prerequisites to the grant of a patent by the U.S. Government Patent Office include:

- (1) Novelty;<sup>32</sup>
- (2) Utility;<sup>33</sup>
- (3) Non-obviousness;<sup>34</sup> and
- (4) Proper “disclosure”<sup>35</sup> of the invention.

An application for a patent should be rejected if the invention is already known or would have been obvious to a person having ordinary skill in the field of the invention at the time the invention was made in view of the relevant “prior art.”<sup>36</sup> In general, prior art is the existing

Pub. L. No. 103-465 § 532(a)(1), 108 Stat. 4983, 4990 (1994) (codified as amended at 35 U.S.C. § 154(a) (1984 & Supp. 1995)) (making “offers to sell” an infringing activity under a U.S. patent). This change may help alleged infringers, including small and medium sized businesses, to obtain insurance coverage under their comprehensive general liability insurance policies—in particular, the “advertising injury provision” included in many of these policies.

28. *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 476 (1974).

29. *Atari Games Corp. v. Nintendo of Am., Inc.*, 975 F.2d 832, 844 (Fed. Cir. 1992).

30. 35 U.S.C. § 112 (1988).

31. *A.B. Dick Co. v. Burroughs Corp.*, 713 F.2d 700, 702 (Fed. Cir. 1983).

32. 35 U.S.C. § 102 (1988).

33. *Id.* § 101 (1988).

34. *Id.* § 103 (1988).

35. *Id.* § 112 (1988); 2 DONALD S. CHISUM, A TREATISE ON THE LAW OF PATENTABILITY, VALIDITY AND INFRINGEMENT § 7.01 (rev. 1995).

36. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1566-68 (Fed. Cir. 1987).

body of knowledge or technical information, including printed publications,<sup>37</sup> that are available at a given time to the person of ordinary skill in the art. No patent should restrict anyone from using technology that is already in the public domain.<sup>38</sup> Thus, assuming it has perfect information, the Patent Office will not issue a patent for an invention whose purported advancements are already found in, or are obvious from, the prior art.

An inventor is required to disclose his or her invention sufficiently to enable those skilled in the field to make and use it.<sup>39</sup> The inventor must also set forth the “best mode” for carrying out the invention.<sup>40</sup>

Patent Office examiners determine whether an invention is new and non-obvious by comparing the claims contained in patent applications with prior art contained in the Patent Office “search files”<sup>41</sup> or otherwise available to the Patent Office. The patent examiners also consider items other than those found in the search files. For example, many of the more recently issued U.S. patents are contained in a computer database.<sup>42</sup> Examiners also have access to the Scientific and Technical Information Center which contains technical literature in the form of books and periodicals, foreign patent documents and references, and online search services.<sup>43</sup> Examiners also consider prior art documents supplied by patent applicants (who are under a duty to disclose relevant documents) of which they are aware.<sup>44</sup>

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37. 35 U.S.C. §§ 102(a)–102(b) (1988).

38. *Kimberly-Clark Corp. v. Johnson & Johnson Co.*, 745 F.2d 1437, 1453 (Fed. Cir. 1984).

39. *White Consol. Indus., Inc. v. Vega Servo-Control, Inc.*, 214 U.S.P.Q. (BNA) 796 (S.D. Mich. 1982), *aff'd*, 713 F.2d 788 (Fed. Cir. 1983) (patent held invalid for failure to comply with the disclosure requirements of 35 U.S.C. § 112 (1988)).

40. *DeGeorge v. Bernier*, 768 F.2d 1318, 1324 (Fed. Cir. 1985) (“The purpose of the best mode requirement is to restrain inventors from applying for patents while at the same time concealing from the public preferred embodiments of their inventions . . .”).

41. 35 U.S.C. § 131 (1988); PATENT AND TRADEMARK OFFICE, U.S. DEPARTMENT OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 904, HOW TO SEARCH (rev. 1995).

42. Automated Patent System (APS) is an online system of the Patent Office which allows access to the full text of U.S. patents granted since 1970. In addition, APS provides access to current classification information for all U.S. patents. PATENT AND TRADEMARK OFFICE, U.S. DEPARTMENT OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 902. 03(e), AUTOMATED PATENT SYSTEM (rev. 1995).

43. 35 U.S.C. § 8 (1988); PATENT AND TRADEMARK OFFICE, U.S. DEPARTMENT OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 901. 06(a), SCIENTIFIC AND TECHNICAL INFORMATION CENTER (rev. 1995). The capability of conducting online database searches seems to at least partially remove another reason the Supreme Court relied on in denying patent protection for the software-related invention it reviewed—the Patent Office’s lack of a reliable searching technique. *See Gottschalk v. Benson*, 409 U.S. 63, 72 (1972).

44. 37 C.F.R. § 1.56 (1995). This duty can be satisfied by the filing of an Information Disclosure Statement as provided for in 37 C.F.R. §§ 1.97–98 (1995).

The Patent Office is currently required by statute to hold pending U.S. patent applications in confidence.<sup>45</sup> Consequently, pending applications are not contained in the search files, and the examiner cannot discuss the contents of a patent application with anyone other than the patent applicant or representative.

## V. IMPROVING THE QUALITY OF SOFTWARE PATENTS

The U.S. patent system and how it handles software-related patent applications and patents is obviously not perfect.<sup>46</sup> After the 1994 Software Patent Hearings, Patent Office Commissioner Bruce Lehman said he favored publishing patent applications which, as previously noted, are currently reviewed by the government in strict secrecy.<sup>47</sup> Mr. Lehman further blamed the government for failing to stay abreast of the field of computer programs and stated that the Patent Office was counting on more information from the software industry to produce more durable patent awards.<sup>48</sup>

After creation by the Secretary of Commerce in 1990, an Advisory Commission on Patent Law Reform issued a report which included a number of recommendations with respect to software-related inventions.<sup>49</sup> The Advisory Commission included representatives from U.S. businesses, both large and small, in addition to universities, the patent bar, the antitrust bar, and the public. The report recommended that the current framework of laws protecting computer program-related inventions be maintained and that no special test for interpretation of the patent law should be applied to computer program-related patent applications.<sup>50</sup>

Recommendations XI-E through XI-H were directed to the United States Patent Office (U.S. PTO) and relate to the improvement of the patent examination and reexamination processes:

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45. 35 U.S.C. § 122 (1988).

46. In 1993, Patent Office Commissioner Bruce Lehman ordered reexamination of U.S. Patent No. 5,241,671, "The Compton Multimedia patent." *PAT. TRADEMARK & COPYRIGHT J.* (BNA), No. 1150, at 177 (1993). The Patent Office responded after the software industry reacted vehemently to the patent owner's statement that this was a fundamental patent on multimedia programs that store and retrieve graphics, sound, animation, and text.

47. G. Pascal Zachary, *Patent Commissioner Outlines Steps to Help Avoid Disputes over Software*, *WALL ST. J.*, April 11, 1994, at B6.

48. *Id.*

49. *ADVISORY COMMISSION ON PATENT LAW REFORM, A REPORT TO THE SECRETARY OF COM., BACKGROUND AND MANDATE OF THE ADVISORY COMMISSION ON PATENT LAW REFORM 5* (August 1992).

50. *Id.* at 148-56 (recommendations XI-A, XI-B).

*Recommendation XI-E.* The U.S. PTO should assemble a larger, more complete, non-patent prior art collection and provide its examiners better access to the non-patent prior art in the computer program-related technologies.

*Recommendation XI-F.* The U.S. PTO should make further efforts to classify the patent and non-patent computer program-related art to maximize the ability to search inventions in this field.

*Recommendation XI-G(i).* The U.S. PTO should train patent examiners in the computer program-related technologies to raise and maintain their level of expertise.

*Recommendation XI-G(ii).* The U.S. PTO should recruit as examiners individuals who are experienced in this technology and should take special action to retain experienced examiners.

*Recommendation XI-H(iii).* The Commissioner should implement a study and/or program under 37 U.S.C. § 6 which expands the citation of prior art under 35 U.S.C. § 301 and 37 C.F.R. § 1.501 (the reexamination provisions) to include the citation of not only patents or printed publications but also other material evidencing a verifiable date of prior public use or sale which is shown to be pertinent to an issued patent.

*Recommendation XI-H(vi).* The U.S. PTO should encourage private efforts directed toward assimilating and organizing information with respect to prior public use or sale of technological advances.<sup>51</sup>

The Advisory Commission also added the following legislation recommendation:

*Recommendation XI-I.* Encourage implementation of a system allowing for early publication of pending applications which would be particularly beneficial for fast-moving technologies in accordance with any harmonization efforts that may be undertaken.<sup>52</sup>

With respect to recommendations XI-E and XI-H(vi), Professor Bernard A. Galler, working with the Industrial Technology Institute of Ann Arbor, Michigan, formed the Software Patent Institute (SPI), a

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51. *Id.* at 159–67.

52. *Id.* at 167–68.

nonprofit project, to create and make available to the Patent Office and the public a database of software techniques, particularly nonpatented techniques. The database is a useful resource currently being used by the Patent Office. On October 2, 1995, the SPI Database of Software Technologies opened to the public.

With respect to Recommendation XI-G(i), the SPI has already given a number of courses to the examiners concerning computer program-related technologies.

With respect to Recommendation XI-G(ii), the Patent Office now hires computer scientists as patent examiners.

With respect to Recommendation XI-I, a bill<sup>53</sup> was introduced in the spring of 1995 to require publication of patent applications eighteen months from the earliest filing date. This would allow third parties the opportunity to bring prior art to the attention of the Patent Office. Also, this would allow others to learn about the existence of relevant patent applications so that they can avoid significant investment of resources into technology which may infringe a patent resulting from such an application.

With respect to Recommendation XI-H(iii), a bill<sup>54</sup> was introduced in the spring of 1995 to expand patent reexamination proceedings to allow greater participation by third parties. This should prove to be a significantly less expensive way of challenging an issued patent than through litigation.

Consequently, improvements have been and continue to be made to the patent system to counter the criticisms of those who have argued against the patentability of software-related inventions.

## VI. UNWANTED "IMPROVEMENT" TO CURRENT STATUTORY SCHEME OF PROTECTING SOFTWARE-RELATED TECHNOLOGY

Many witnesses at the 1994 Software Patent Hearings stated that a *sui generis* scheme for protecting software by somehow merging patent and copyright protection would have the following disadvantages:

- (1) Many of the now resolved uncertainties with respect to patent and copyright protection for software would need to be addressed by new judicial precedent in the U.S.; and
- (2) Japan and Europe, which now provide software patent and copyright protection comparable to the U.S., would have to

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53. HR 1733, 104th Cong., 1st Sess. (1995).

54. HR 1732, 104th Cong., 1st Sess. (1995).

change over to this new form of protection, and there is no certainty that they would.<sup>55</sup>

Professor Galler of the SPI has remarked that, “[T]he suggestion that somehow copyright and patent protection should be merged into a single form of protection does not appear to be useful.”<sup>56</sup>

There has been, and continues to be, a legal distinction between the idea (that is, the algorithm) and its expression. In the software field, there has been such a distinction since the early history of the field. Computer scientists and practitioners have long talked about the algorithm, or the abstract process by which a problem can be solved, and a specific expression of that algorithm in the form of a computer program. That distinction has been useful. The terms and the ideas that they express have been in use for almost fifty years, even as the computer field has changed dramatically. It would seem that these two levels of abstraction deserve different kinds of protection, and that copyright and patent protection are just about right.<sup>57</sup>

## VII. CONCLUSION

Overall, the patent system is working and should be improved rather than abandoned. There is no need to abolish patent protection for software-related inventions simply because some invalid patents may have been issued. Current and contemplated improvements to the patent system, as well as the checks and balances imposed by the federal courts, provide mechanisms to minimize the frequency of such occurrences and will remove many of these patents if they are granted in the future.

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55. *U.S. Patent and Trademark Office, Public Hearing on Patent Protection for Software-Related Inventions* (San Jose, Cal. Jan. 26-27, 1994 and Arlington, Va. Feb. 10-11, 1994). Furthermore, the treaties currently in force would have to be changed to treat software differently. Also, a new treaty would be needed for such a *sui generis* scheme. See *supra* note 16.

56. Bernard A. Galler, *Software and Intellectual Property Protection: Copyright and Patent Issues for Computer and Legal Professionals* 136 (1995).

57. *Id.*