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COPYRIGHT PROTECTION FOR ARCHITECTURAL WORKS

*Christopher C. Dremann**

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> plans, or drawings. The work includes the overall form as well as the arrangement and composition of spaces and elements in the design, but does not include individual standard features.[7]

Only a few decisions have been reported that interpret the scope of protection afforded by the Architectural Works Act. Thus far, the courts have applied the traditional theories of validity, infringement, and damages to cases involving architectural works. Nevertheless, practitioners should consider the historical development of protection for architectural plans and drawings, in view of the limitations promulgated by Congress and the Copyright Office, to predict the scope of protection available to architectural works under section 102(a)(8).

II. THE HISTORICAL DEVELOPMENT OF PROTECTION FOR ARCHITECTURAL PLANS AND DRAWINGS

During the first 200 years of the Copyright Act and the first 100 years of the Berne Convention, the United States did not recognize copyright protection for architectural works. The Copyright Act of 1790 granted copyright protection to maps, charts, and books.[8] By 1870, the list of protected subject matter had been expanded to include drawings, and models or designs intended to be perfected as works of the fine arts.[9] The Copyright Act of 1909 recast protected subject matter into eleven categories including: "[w]orks of art; models, or designs for works of art" and "[d]rawings or plastic works of a scientific or technical character."[10] The Copyright Act of 1976 revised the copyright law in its entirety and created seven categories of statutory subject matter eligible for protection, providing definitions for some, but not all, of the enumerated categories.[11] In 1988, the

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[7] Id. at § 101.

[8] Act of May 31, 1790, ch. 15, 1 Stat. 124 (repealed 1909).

[9] Mazer v. Stein, 347 U.S. 201, 209 n.19, 100 U.S.P.Q. (BNA) 325, 330 n.19 (1954).

[10] Copyright Act of Mar. 4, 1909, ch. 301, §§ 5(g), 5(i), 35 Stat. 1076-77 (repealed 1976).

[11] Copyright Act of 1976, 17 U.S.C. §§ 101, 102 (Supp. I 1977).

only to the expression of an idea and not to the use of the idea itself.[16] Any greater protection would invade the exclusive province for the protection of ideas and methods established by the Patent Act.

In the usual situation, an architect's design of a building will not meet the demands of novelty and nonobviousness required by the Patent Act.[17] Consequently, architects turn to the Copyright Act to protect the expression of their ideas.[18] The problem *Baker* presents to architects is that the economic value of architectural plans lies not in the exclusive right to reproduce and vend the plans, but rather *in the use of the ideas expressed in the plans* to produce a building.[19] Even though the 1909 Act recognized a distinction in the law between architectural plans, which were protected,

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[16] *Baker*, 101 U.S. at 102-04. The rule announced in *Baker* was later codified at 17 U.S.C. § 102(b).

[17] 35 U.S.C. §§ 101, 103 (1994). To be entitled to design patent protection, the design of an article of manufacture must be novel, original, and ornamental, in addition to being nonobvious. The design of a building is an article of manufacture, and thus, subject to design patent protection. However, only the ornamental, non-functional elements of the design that are both new and would not have been obvious to one possessing ordinary skill are subject to protection.

[18] Robert R. Jones Assoc. v. Nino Homes, 858 F.2d 274, 278, 8 U.S.P.Q.2d (BNA) 1224, 1227 (6th Cir. 1988). *See generally* Dale Ellickson, *Architect's Most Frequent Questions About Copyrights*, 77 ARCHITECTURE 132 (1988) ("Ideas are an architect's stock in trade. They traditionally have been expressed through drawings.").

[19] *Robert R. Jones Assoc.*, 858 F.2d at 279, 8 U.S.P.Q.2d at 1228 ("The doctrine enunciated in *Baker v. Selden* is particularly problematic where architectural plans are the copyrighted items because the principal value of such creative work lies in their use in constructing a building."); *see also* 1 NIMMER ON COPYRIGHT, *supra* note 5, § 2.18[C][1] at 2-200 ("But are there some works which by their very nature may be copied for purposes of use and not for purposes of explanation [criticizing *Baker*], so that to deny liability by reason of copying is in effect if not in theory to deny copyrightability?").

plans which were then used to build a house.[24] In response, the defendants claimed that their architect used a rough sketch of a house similar to the Scholz design to prepare plans for their house.[25]

The *Scholz* court avoided deciding the effect of *Baker* in this situation by finding that the purpose of the registration for the booklet was "to preserve [the booklet's] value as an advertising medium, and not to give [Scholz] the exclusive right to copy the plans therein."[26] The court's suggestion that *Baker* permits the "making" of duplicate plans can be explained by its finding that there was no evidence that Scholz's registered *plans*, as opposed to its registered *booklet* containing the drawing that was copied, were utilized in planning or constructing the defendants' house.[27]

Even under the 1976 Act, courts, and particularly the Sixth Circuit, continued to find the principle announced in *Baker* "problematic for architectural plans."[28] In *Robert R. Jones Assoc. v. Nino Homes*, the Sixth Circuit stated:

> If *Baker* is applied strictly, and the [1976] Copyright Act is interpreted as merely prohibiting others from selling copyrighted plans and not from using the plans to construct other buildings, then the statute may not afford the kind of protection necessary to give architects adequate incentive to create new architectural designs. Conversely, giving the owner of a copyright in architectural plans the right to prevent others from constructing buildings substantially

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[24] *Scholz Homes*, 379 F.2d at 85, 154 U.S.P.Q. (BNA) at 197.

[25] *Id.*

[26] *Id.* at 87, 154 U.S.P.Q. (BNA) at 199; *Robert R. Jones Assoc.*, 858 F.2d at 279, 8 U.S.P.Q.2d (BNA) at 1228 (quoting *Scholz Homes*).

[27] *Scholz Homes*, 379 F.2d at 86-87, 154 U.S.P.Q. (BNA) at 199. Since the defendants did not copy from the plaintiff's registered *plans*, the fact that the defendants' architectural plans were essentially identical to the plaintiff's was not actionable. However, the more plausible explanation, as suggested in *Robert R. Jones Assoc.*, is that the *Scholz Homes* court was merely speculating on the consequences of a strict application of *Baker*.

[28] *See supra* note 19 (quoting *Robert R. Jones Assoc.*).

The "useful article" exception of the statute excludes copyright protection for pictorial, graphic, or sculptural works "having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information" unless the design of the article "incorporates pictorial, graphic, or sculptural features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article."[34] While architectural plans are not useful articles under the statute,[35] the buildings described by those architectural plans clearly are.

After the effective date of the 1976 Act, courts found it difficult to extend copyright protection in architectural plans to prevent copying of the underlying structure; however, they did not find it to be impossible. Despite the obstacles presented by *Baker* and the section 113(b) limitation, one court had extended copyright protection in architectural plans to *temporarily* enjoin the construction of a house based on infringing plans even before the Architectural Works Act.[36] The defendants in *Demetriades v. Kauffman* contracted with a builder to build a house of "substantially similar design"

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[34] 17 U.S.C. § 101 (1994). The "separability" test owes its origin to the rule announced in *Mazer v. Stein*, 347 U.S. 201, 100 U.S.P.Q. (BNA) 325 (1954). In codifying the Court's decision in *Mazer*, Congress noted:

> A special situation is presented by architectural works. An architect's plans and drawings would, of course, be protected by copyright, but the extent to which that protection would extend to the structure depicted would depend on the circumstances . . . . [W]here the only elements of shape in an architectural design are conceptually inseparable from the utilitarian aspects of the structure, copyright protection for the design would not be available.

H.R. REP. NO. 1476, 96th Cong., 2d Sess. 55 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5668.

[35] "The intrinsic function of an architectural plan is precisely to 'convey information' as to the manner in which a building may be constructed, and hence is not a 'useful article' as defined [in § 101]." 1 NIMMER ON COPYRIGHT, *supra* note 5, § 2.08[D][2][a] at 2-117; *accord* Eales v. Environmental Lifestyles, Inc., 958 F.2d 876, 879-80, 22 U.S.P.Q.2d (BNA) 1059, 1062 ("The intrinsic function of an architectural plan is to convey the information necessary to enable the reader to construct a building.").

[36] *See Demetriades*, 680 F. Supp. at 663, 6 U.S.P.Q.2d (BNA) at 1742.

III. THE LEGISLATIVE HISTORY OF THE ARCHITECTURAL WORKS COPYRIGHT PROTECTION ACT

In formulating the Berne Convention Implementation Act, Congress adopted a "minimalist" approach to the United States' adherence to the Berne Convention.[41] Testimony from respected copyright authorities suggested that statutory protection for architectural works may not be required under the minimalist approach.[42] The experts reasoned that explicit protection for architectural works was unnecessary because the copyright law provided sufficient protection for architectural works to comply with Article 2(1) of the Berne Convention.[43]

At the suggestion of the experts, Representative Kastenmeier (D-Wis.) requested the Copyright Office to study the issue and report its

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[41] The objective of the Berne Convention Implementation Act . . . was simple: to permit adherence by making only those changes in U.S. law absolutely required to meet our treaty obligations. This approach, so-called minimalism, was not adopted out of a desire to sneak into the convention, but, rather, out of a conviction that when legislating in the area of copyright . . . we must proceed with great caution in order to avoid upsetting the existing balance of interests among creators, distributors, and consumers.

Introduction Of The Architectural Works Copyright Protection Act, 136 CONG. REC. E259 (daily ed. Feb. 7, 1990) (remarks of Rep. Robert W. Kastenmeier, Chairman of the House Committee on the Judiciary); *see also* H.R. REP. NO. 735, *supra* note 4, at 10, *reprinted in* 1990 U.S.C.C.A.N. at 6941.

[42] H.R. REP. NO. 735, *supra* note 4, at 11, *reprinted in* 1990 U.S.C.C.A.N. at 6942. Professor Paul Goldstein, Stanford Law School, and Barbara Ringer, Esq., former Register of Copyrights, provided the testimony before the Subcommittee on Courts, Civil Liberties and Administration of Justice of the House Committee on the Judiciary which caused the provisions for protection of architectural works to be deleted from the Berne Implementation Act. H.R. 1623, 100th Cong. 1st & 2nd Sess. 679-680 (statement of Paul Goldstein) (1987); 689 (statement of Barbara Ringer) (1988).

[43] H.R. REP. NO. 735, *supra* note 4, at 11, *reprinted in* 1990 U.S.C.C.A.N. at 6942.

Representative Kastenmeier offered the bill as "important legislation because of the central role works of architecture play in our daily lives, not only as forms of shelter and as investments, but also as works of art."[48] He further explained that the bill was "intended to cover an architect's artistic expression" but did not "encompass methods of construction, or purely functional elements comprised of standard features, such as plain doorways, arches, windows, or roofs."[49] However, Representative Kastenmeier left the problem of determining copyrightability and the scope of protection for architectural works to the "Copyright Office or the courts" which would "assess the particular nature of creativity in works of architecture as presented in the particular structure at issue."[50]

The definition of "architectural work" originally suggested by H.R. 3990 was "the design of a building *or other three-dimensional structure*, as embodied in that building or structure."[51] The definition made clear that the protected subject matter was the constructed design, and not the design as depicted in the architectural plans, drawings, models, or elevations, which were already protected as pictorial, graphic, or sculptural works under section 102(a)(5).[52] By creating a new class of subject matter under section

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[48] H.R. REP. NO. 735, *supra* note 4, at 12, *reprinted in* 1990 U.S.C.C.A.N. at 6943.

[49] 136 CONG. REC. E259, *supra* note 41, at 1733.

[50] *Id.* at 1734.

[51] *Id.*

[52] Architectural plans now enjoy dual protection as pictorial, graphic, or sculptural works under § 102(a)(5), and as architectural works under § 102(a)(8). Two of the effects of dual protection is that architectural plans will have a different scope of protection and different copyright duration depending on the subject matter class of registration. *See* Jane C. Ginsburg, *Copyright In The 101st Congress: Commentary On The Visual Artists Rights Act And The Architectural Works Copyright Protection Act Of 1990*, 14 COLUM.-VLA J.L. & ARTS 477, 493 n.62, n.64 (1990). Congress was careful to emphasize that nothing in the Architectural Works Act affects protection for architectural plans, drawings, or models under § 102(a)(5).

> The bill's intention is to keep these two forms of protection separate. An individual creating an architectural work by depicting that work in plans or

Justice.[56] Register of Copyrights Ralph Oman agreed with the supporters, but nevertheless, listed a number of areas of ambiguity remaining in the legislation including: (i) what is the standard for protection? and (ii) how will the copyright law's exclusion of ideas, methods, and processes apply to architecture?[57] The American Institute of Architects (AIA) urged careful consideration of the term "design" in H.R. 3990. "Architects," the AIA explained, "should be protected from the unauthorized copying of their overall designs, including the shape of the building, the arrangement of spaces and the particular selection and arrangement of elements, . . . [but not for] discrete elements taken by themselves."[58]

H.R. 3990 was repackaged as Title III of H.R. 5498[59] and included a number of significant changes in response to the comments received. The definition of "architectural work" was changed to "the design of a building as embodied in any tangible medium of expression, including a building, architectural plans, or drawings." The revised definition also added that "[t]he work includes the overall form as well as the arrangement and composition of spaces and elements in the design, but does not include individual standard features."[60] The phrase "three-dimensional structure" from H.R. 3990 was deleted by the Subcommittee because of the concern that

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[56] *PTO, Copyright Office, and Architects Support Architectural Works Protection*, 39 Pat. Trademark & Copyright J. (BNA) 391 (Mar. 15, 1990).

[57] *Id.* at 392.

[58] *Id.* The AIA was also concerned about the provision in H.R. 3990 permitting photographs of buildings in public places. Mr. Daileda of the AIA explained that with modern technology, a photograph of a building taken in a public place along with standard dimensions of unprotected elements could be digitized using a computer to develop architectural plans for the building. The plans developed from the photograph could then be used to construct an infringing structure much like plans developed from use (without copying) of floor plans and architectural drawings before the Architectural Works Act. The AIA suggested language be added to the bill to prevent such infringing use of photographs. *Id.*

[59] 101st Cong., 2d Sess. (1990); *New Copyright Bill Includes Software Rental, Fair Use, & Architectural Works*, 40 Pat. Trademark & Copyright J. (BNA) 325 (Aug. 16, 1990) [hereinafter *New Copyright Bill*].

[60] *New Copyright Bill, supra* note 59, at 326.

designs such as bird houses, dog houses, and zoo enclosures.[68] Instead, the Copyright Office confirmed that the narrower term "building" encompasses "habitable structures such as houses and office buildings" (as compared to the broader term "three-dimensional structure" which could include interstate highway bridges, cloverleafs, canals, dams and pedestrian walkways) and that the narrower term "also covers structures that are used, but not inhabited by human beings such as churches, pergolas, gazebos, and garden pavilions."[69]

However, the Copyright Office did adopt four changes to the proposed regulations that were intended to clarify the definition of "building." First, a provision was added that the term "building" applies to structures that are intended to be both permanent and stationary. Second, a clarification was made specifying that the list of examples of protectable subject matter in section 202.11(b)(2) is not all inclusive. Third, museums were added to the list of protectable subject matter; and fourth, it was specified that the term "humanly" qualifies the phrase "habitable structures."[70] The Copyright Office modified the list of works excluded in section 202.11(d) by replacing "certain functional structures" with "structures other than buildings," adding tents, recreational vehicles, mobile homes, and boats to the list of exclusions, and also adding "standard configuration of spaces" to the exclusion for standard features.[71]

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[68] *Id.* at 45,308 (comment letter received from Committee No. 304 of the Patent, Trademark, and Copyright Section of the American Bar Association).

[69] *Id.*; H.R. REP. NO. 735, *supra* note 4, at 19-20, *reprinted in* 1990 U.S.C.C.A.N. at 6950-51.

[70] 57 Fed. Reg. 45,307, *supra* note 52, at 45,308-09.

[71] *Id.* at 45,309. The Copyright office made these changes to the proposed regulations because it believed that Congress intended to limit protection to "humanly habitable structures or other similar structures used by human beings." *Id.*

and a sales brochure for a single-family residence which it designated "Estate House I." The sales brochure contained scaled floor plans and a three-dimensional artistic rendering of the elevation of the home.[76]

Value Group completed construction of its first "Estate House I" design in the spring of 1992.[77] Although Value Group was approached to build a second "Estate House I" home in the same development, it refused because doing so would "impair the integrity of the development and violate the municipal 'look alike' ordinance."[78] At about the same time, defendant Mendham Lake contacted Value Group and requested copies of the architectural plans for the "Estate House I" design for use in a nearby development.[79] Value Group told Mendham Lake that the plans were not available for use because an "Estate House I" home built by Mendham Lake would "compete with" and "adversely impact on" a Value Group project in the same geographical area.[80]

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plaintiffs' counsel, "although the true technical infringement occurred as a result of the duplication of the floor plans, what got us our TRO was simply them 'knocking off' our appearance based upon the three-dimensional view in the brochure." Telephone Interview with McHattie, *supra* note 72.

[76] Using standard window and door widths to determine the scale of Value Group's drawing, Mendham Lake was able to calculate the actual dimensions of the rooms and other features of Value Group's design and develop plans which Mendham Lake used to build the infringing house. Telephone Interview with McHattie, *supra* note 72. The "elevation" of a house refers to the facade and external design features including overall form, or shape, of roof lines, window trim, and ornamentation.

[77] Value Group's "Estate House I" home was first built in a development known as "Rickland Estates" in Randolph, New Jersey. *Value Group*, 800 F. Supp. at 1230, 24 U.S.P.Q.2d (BNA) at 1533.

[78] *Id.*

[79] Mendham Lake did not inform Value Group that the house would be built for the same buyers whose request for an "Estate House I" home to be built in the "Rickland Estates" development Value Group had previously rejected. *Id.*, 24 U.S.P.Q.2d (BNA) at 1532.

[80] *Id.* at 1230, 24 U.S.P.Q.2d (BNA) at 1533.

Judge Bassler explained that the plaintiffs were required to show: (i) ownership of a valid copyright, and (ii) copying by the defendant.[85]

Judge Bassler began by stating that although ownership of a valid copyright certificate constitutes *prima facie* evidence of validity, "an architectural work must exhibit some modicum of creativity before it is eligible for copyright protection."[86] Finding that Value Group's architectural plans and sales brochure[87] satisfied the *Feist* test, Judge Bassler turned to the issue of copying by the defendant. The judge reasoned that copying could be established "with circumstantial evidence by showing that the defendant had access to the work and that the alleged infringing work is 'substantially

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[85] *Id.* at 1232, 24 U.S.P.Q.2d (BNA) at 1534 (citing Midway Mfg. Co. v. Bandai-America, Inc., 546 F. Supp. 125, 138, 216 U.S.P.Q. (BNA) 812, 820 (D. N.J. 1982) (in turn citing Franklin Mint Corp. v. National Wildlife Art Exch., Inc., 575 F.2d 62, 64, 97 U.S.P.Q. (BNA) 721, 723-24 (3rd Cir. 1978))).

[86] *Value Group*, 800 F. Supp. at 1232, 24 U.S.P.Q.2d (BNA) at 1534 (relying on Feist Publications, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 345, 18 U.S.P.Q.2d (BNA) 1275, 1278 (1991)). The *Feist* Court held that "original" means only that the work to be registered was "independently created" and "that it possesses a minimal degree of creativity." The amount of creativity required is extremely low and the vast majority of works qualify easily as long as they possess some creative spark, no matter how crude, humble, or obvious the creative spark may seem. *Feist*, 499 U.S. at 349, 18 U.S.P.Q.2d (BNA) at 1283. Considering the standard of originality to be applied to architectural works, Congress stated:

> The proposed legislation incorporates the general standards of originality applicable for all other copyrightable subject matter. The standard 'does not include requirements of novelty, ingenuity, or [a]esthetic merit.' Subjective determinations of artistic or aesthetic merit are inappropriate and contrary to fundamental principles of copyright law.

H.R. REP. NO. 735, *supra* note 4, at 21, *reprinted in* 1990 U.S.C.C.A.N. at 6952 (citing Bleistein v. Donaldson Lithographing Co., 188 U.S. 239, 251-52 (1903)) (footnotes omitted).

[87] Judge Bassler did not refer to Value Group's copyright in the design of the house itself. However, the Architectural Works Act established copyright protection for an architectural work as embodied in *any* tangible means of expression, including a building, architectural plans, or *drawings*. *See* 17 U.S.C. §§ 101, 102(a)(8) (Supp. III 1991).

In the cases reported since *Value Group*, courts have found that section 102(a)(8) of the Copyright Act protects designs for residential homes[92] and the design of a one-story office showroom warehouse.[93] In *Tri-L Construction, Inc. v. Jackson*, the allegedly infringed design of plaintiff's "Linwood" home was embodied in a copyrighted promotional sales brochure.[94] In *Richmond Homes Mgmt. v. Raintree, Inc.* (*Richmond I* and *Richmond II*), the plaintiff's "Louisa" design was embodied in architectural plans, the work itself, and a flyer depicting the elevation and floor plans.[95] In *Fred Riley Home Bldg., Corp. v. Cosgrove*, the allegedly infringing designs were created from an *inspection* of homes built according to plaintiffs' protected "Summit" and "Seville" architectural drawings.[96] In *CSM Investors, Inc. v. Everest Dev., Ltd.*, city officials provided the defendant developer with

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U.S.P.Q.2d (BNA) at 1537, n.8 (citing Demetriades v. Kauffman, 690 F. Supp. 289, 295, 8 U.S.P.Q.2d (BNA) 1130, 1134 (S.D.N.Y. 1988)).

[92] *See* Tri-L Constr., Inc. v. Jackson, No. 94-0041, 1994 U.S. Dist. LEXIS 13242 (W.D. Va. Sept. 13, 1994); Richmond Homes Mgmt. v. Raintree, Inc., 862 F. Supp. 1517, 33 U.S.P.Q.2d (BNA) 1100 (W.D. Va. 1994) (*Richmond II*); Fred Riley Home Bldg. Corp. v. Cosgrove, 864 F. Supp. 1034 (D. Kan. Aug. 19, 1994); Richmond Homes Mgmt. v. Raintree, Inc., No. 93-0047, 1994 U.S. Dist. LEXIS 3396 (W.D. Va. Mar. 9, 1994) (*Richmond I*); Bryce & Polazzola Architects & Assoc., Inc. v. AME Group, Inc., 865 F. Supp. 401, 31 U.S.P.Q.2d (BNA) 1844 (E.D. Mich. 1994).

[93] *See* CSM Investors, Inc. v. Everest Dev., Ltd., 840 F. Supp. 1304, 30 U.S.P.Q.2d (BNA) 1039 (D. Minn. 1994).

[94] *Tri-L Const.*, No. 94-0041, 1994 U.S. Dist. LEXIS 13242 at *3; *see also Bryce & Polazzola Architects & Assoc., Inc.*, 865 F. Supp. at 403, 31 U.S.P.Q.2d (BNA) at 1845 ("spec sheets" consisting of photocopies of the specifications for the house and three sketches of the elevation and floor plans used to create plans for infringing design).

[95] *Richmond I*, No. 93-0047, 1994 U.S. Dist. LEXIS 3396 at *9; *Richmond II*, 862 F. Supp. at 1520, 33 U.S.P.Q.2d (BNA) at 1102. Although the plaintiff introduced evidence of direct copying, it was unknown whether the plans, the work, or the brochure were used to develop the infringing design. *Richmond I*, 1994 U.S. Dist. LEXIS 3396 at *9-10; *Richmond II*, 862 F. Supp. at 1522, 33 U.S.P.Q.2d (BNA) at 1103.

[96] *Fred Riley Home Bldg., Corp.*, 864 F. Supp. at 1039, 1041.

In evaluating the plaintiff's likelihood of success on the merits, the *Richmond I* court stated:

> Although the idea of a colonial style house is not itself protectable, the specific layout designed by Richmond Homes, that is the particular expression of the *Louisa* design—the long double-A frame outlining the front as advertised in the real estate listing; the different slopes to the roof both in front and in back; the double windows; the octagonal-shaped air vents; the placement of the family room in the front of the house, etc.—constitutes an expression of an idea which this Court shall protect against infringement.[101]

Following *Value Group*, the *Richmond I* court did not hesitate in granting plaintiff's motion for a preliminary injunction to enjoin further construction of homes according to defendant's allegedly infringing home design.[102] In *Tri-L Construction*, however, the court declined to enjoin further construction of a particular house partly because defendant had successfully rebutted the presumption of validity of plaintiff's copyright, and partly because an injunction would have prevented the buyers from moving into their new home after they had already sold their previous home.[103]

The measure of damages for infringement of architectural works has been found to be the same as for other categories of protected subject matter.[104] After finding infringement, the *Richmond II* court determined that a successful plaintiff is entitled to recover its actual damages suffered as a result of the infringement plus any profits of the infringer attributable to the

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used to conclude infringement of the *drawings*, such similarities should not be relied on to find infringement of the *architectural work*.

[101] *Richmond I*, 1994 U.S. Dist. LEXIS 3396, at *15.

[102] *Richmond I*, 1994 U.S. Dist. LEXIS 3396, at *20.

[103] *Tri-L Const.*, 1994 U.S. Dist. LEXIS 13242, at *11-12.

[104] *Richmond II*, 862 F. Supp. at 1528, 33 U.S.P.Q.2d (BNA) at 1108 (citing Walker v. Forbes, Inc., 28 F.3d 409, 416, 31 U.S.P.Q.2d (BNA) 1349, 1351 (4th Cir. 1994)) (damages are premised on a theory of restitution and unjust enrichment).

works.[109] Accordingly, the burden of determining the limits of the Architectural Works Act will fall on future courts. Practitioners must, therefore, predict the scope of protection to be afforded architectural works on the basis of the congressional record and the mandates of the Copyright Office, in view of the historical development of copyright protection for architectural plans and drawings.

Although Congress interpreted the United States' Berne Convention obligations narrowly,[110] future courts will likely expand section 102(a)(8) protection to be more consistent with the scope of protection afforded architectural works in other Berne countries. One question conspicuously left ambiguous by the Architectural Works Act is: what is the breadth of subject matter eligible for protection?[111] Future courts will likely find that certain architectural works which do not meet the narrow definition of a "building" promulgated by Congress and the Copyright Office, such as bridges, mobile homes, and farm structures, are no less deserving of statutory protection under section 102(a)(8).

Representative Kastenmeier suggested broad coverage when he introduced H.R. 3990. Congress, however, rejected protection for the designs

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[109] *Value Group* was decided in the context of a temporary restraining order hearing and Judge Bassler relied on the traditional tests of copyrightability and infringement historically applied to other categories of subject matter. Because the subject matter involved in *Value Group* (*i.e.*, a custom-built house and floor plans that appeared in a sales brochure) clearly fell within the realm of protectable architectural works, Judge Bassler did not address copyrightability other than to determine that Value Group was the owner of a valid copyright certificate for the work.

[110] *See supra* text accompanying note 41.

[111] *See, e.g.*, Raphael Winick, *Copyright Protection For Architecture After the Architectural Works Copyright Protection Act of 1990*, 41 DUKE L. J. 1598, 1614 (1992) ("The legislative history provides few clues for defining the line between protected 'buildings' and unprotected 'other three-dimensional structures.'"); Andrew S. Pollack, *The Architectural Works Copyright Protection Act: Analysis of Probable Ramifications and Arising Issues*, 70 NEB. L. REV. 873, 875 (1991) ("'What is a building?' is perhaps the first question that comes to mind upon reading the new definitional section.") (quoting Goldberg & Bernstein, *Legislation By The 101st Congress*, N.Y.L.J., Jan. 18, 1991, at 3).

minimal amount of artistic creativity.[117] Unlike other Berne Convention countries, the United States' copyright law is based on encouraging the "Progress of Science and the useful Arts"[118] granting authors the exclusive right to reproduce their copyrighted works.[119]

As demonstrated by the case law which developed for the protection of architectural plans and drawings, the initial cases under the Architectural Works Act will likely involve the design of simple, multi-copy buildings, such as tract houses.[120] It is this type of architecture, *i.e.*, structures which are easy and profitable to copy, that an architect has the greatest incentive to protect.[121] Because of similar economic concerns, there are many structures other than "buildings," as that term has been defined by Congress and the Copyright Office, which architects find equally necessary to protect. Thus, when a case of first impression is presented in which the economic equities lie with the copyright claimant, the court will likely extend copyright

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[117] *See generally* Natalie Wargo, Note, *Copyright Protection for Architecture and the Berne Convention*, 65 N.Y.U. L. REV. 403, 409-12 (1990) (An excellent review of the theories of various Berne Convention countries supporting protection of architectural works.).

[118] U.S. CONST. art. I, § 8, cl. 8. European intellectual property law recognizes the inherent natural rights of authors and artists in the paternity and integrity of their works. Berne Convention, *supra* note 5, at 235. In comparison, the recent moral rights amendments to Title 17 are limited, and as far as architectural works are concerned, practically nonexistent. *See also* Winick, *supra* note 111, at 1600 n.18, 1601 n.21.

[119] 17 U.S.C. § 106(1) (1994); Bleistein v. Donaldson Lithographing Co., 188 U.S. 239 (1903).

[120] *See generally* cases cited *supra* part IV.

[121] *See* Winick, *supra* note 111, at 1606-07:

> Indeed, the more reproducible a building is, the more likely it is that the architect designed the building with the economic incentive of reproductions in mind. To allow direct copying of, for example, single-family houses and small-or medium-sized industrial buildings, which are the most likely to be built around standardized plans, would be to diminish the architect's economic incentive to create popular, standardized works.

contribute a fortress-like appearance to the bridge which may have been intended to provide confidence in the integrity of the *National Road* to early travelers. Covered bridges, like the one over the Upper Ammonoosuc River in Stark, New Hampshire,[126] first appeared in the United States. Bridges were typically covered to protect their intricate truss work from the harsh weather and to prevent livestock from shying at the sight of the rushing water below. But the covered bridge at Stark was also designed to duplicate the architecture of the nearby town. The *Stark Bridge* with its pitched roof, open parallel walkways, arched entrance, and planked exterior sides comprises an artistic "arrangement and composition of spaces and elements" in its design.[127] However, if the structure were built today, it would not be eligible for copyright protection under the Architectural Works Act because it does not meet the definition of "building."

Similarly, the double arch and vertical twin-column supports of the *Russian River Gulch Bridge* at Mendocino, California are deserving of protection under section 102(a)(8).[128] Although the arch is required to allow the water below to pass, and the supports are necessary to strengthen the bridge, their distinctive tapered shapes are not dictated by functional concerns.[129] In contrast, the flat design and steel construction of the *Eads*

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[126] *Id.* at 149 (photograph and text).

[127] The phrase "arrangement and composition of spaces and elements" recognizes that: (i) creativity in architecture frequently takes the form of a selection, coordination, or arrangement of unprotectable elements into an original, protectable whole; (ii) an architect may incorporate new, protectable design elements into otherwise standard, unprotectable building features; and (iii) interior architecture may be protected. H.R. REP. NO. 735, *supra* note 4, at 18, *reprinted in* 1990 U.S.C.C.A.N. at 6949. Congress' objective for recognizing this aspect of protection for architectural works was to promote, rather than impede, the progress of architectural innovation. *Id.*

[128] KOSTOF, *supra* note 125, at 330 (photograph).

[129] *See supra* text accompanying note 55 (*i.e.*, if the artistic elements are not *absolutely* functionally required, the work is protectable). There is nothing about the function of a bridge that absolutely requires the arch and the supports to be rectangular and tapered as opposed to any other combination of geometric shapes. *Id.*

stationary as any other building inhabited by humans. Much like the elevation of a tract home, many fixed-site mobile homes feature distinctive roof lines and floor-to-ceiling windows which follow the pitch of the roof line to permit the available light to penetrate the interior living space.[134]

Farm structures are not inhabited by humans, and arguably are not used by humans in the same sense as churches, museums, gazebos, and garden pavilions. Yet the overall form or the arrangement and composition of spaces and elements of the design of many farm structures compares favorably to the best environmental designs of Frank Lloyd Wright. Wright was famous for creating buildings from designs which focused on the relationship of the building to the surrounding environment.[135] Similarly, many designs of farm structures, and particularly barns, make artistic use of the features of the surrounding landscape.

Although driven by functional concerns, such as the principle of gravity feed, a barn near Bridgewater, Vermont utilizes a steep hillside to

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to do with mobility—the lure of being able to pick up and go whenever the spirit moves you. The only trip for most mobile homes is the first one, from the factory to the site.").

[134] *See id.* at 63. (photograph titled *Mobile Home, Palmdale, California*).

[135] The designs of Frank Lloyd Wright have been described as achieving a "biological unity . . . between landscape and interior living space, which allow[s] the two to be joyfully united." MARCO DEZZI BARDESCHI, FRANK LLOYD WRIGHT 30 (1972). Striking examples of Wright's ability to combine the pragmatic requirements of modern living with the natural environment include the *E.J. Kauffmann House* (also known as *Falling Water*) at Bear Run, Pennsylvania, BARDESCHI, *supra* at 28-31 (photographs and accompanying text), and *Taliesin West*, Maricopa Mesa, Paradise Valley near Phoenix, Arizona, BARDESCHI, *supra*, at 29-32 (colour plates). Another example of environmentally planned architecture is Kevin Roche's design for Union Carbide's administrative headquarters at Danbury, Connecticut. The building is a quarter-mile long arching structure on raised exposed concrete feet with fingers of office "pods" resembling loose pieces of a jigsaw puzzle radiating from a central parking structure. The building is nestled along a saddle of forested land that shields the structure from the view of the surrounding open countryside. *See* KOSTOF, *supra* note 125, at 129-31 (wherein the author compares Union Carbide's headquarters to "a giant serpent basking in the sun, rejecting the energy and excitement of the big city"), 282 (lower photograph) (aerial view).

arrangement of spaces. Although it was also motivated by the convenience of gravity feed, a barn located near Waitesfield, Vermont[139] utilizes its available space in a manner which is comparable to the floor plan of a typical tract house.

In a copyright scheme which protects the design of a tract house as embodied in its architectural plans,[140] there is no logical reason to deny the same scope of protection to the unique arrangement and composition of spaces and elements found inside an atypical barn. The floor plan of a house is intended for the convenience of its human inhabitants. The floor plan of a barn or other farm structure is likewise designed for the convenience of its inhabitants. Viewed from the perspective of the task of the architect, there is no distinction between the two. Although farm structures *could* be considered under the "used by humans" classification of copyrightable subject matter, the restrictive regulations for registration promulgated by the Copyright Office *provide no assurance* that barns and other farm structures will receive the same scope of copyright protection enjoyed by tract houses.

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[139] *See* ARTHUR & WITNEY, *supra* note 136, at 51 f:

> The exterior of this barn gives no clue to its remarkably efficient interior. It is placed right on the edge of the country road, and its ramp reaches the threshing floor under cover. One feature of this barn, for which the owner expressed to us his indebtedness to his grandfather who built it, is that the hay from the wagon is pitched down with speed and ease and not up.

Id. at 50 d.

[140] *See, e.g.*, Ga-On Homes, Inc. v. Spitzer Homes, Inc. 178 U.S.P.Q. (BNA) 183, 185 (1973):

> I don't think you could build a house, in a modern home in America, without having a kitchen and a bedroom and a family room. That has even become almost a necessity. But the peculiar arrangement of them sometimes results in a design concept which, when all put together, is an appealing salable product. That is the concept that can be copyrighted and was copyrighted.

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THE RIGHT OF PUBLICITY COMES OF AGE

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The views expressed herein are offered for academic interest and comment and do not necessarily represent the views of Bell, Seltzer, Park & Gibson or any of its clients.

I. INTRODUCTION

This article assesses the protection of one's persona through a right of publicity claim. Section II defines the cause of action and summarizes its derivation from the right of privacy. Section III addresses the prima facie case of a right of publicity claim. Section IV compares and contrasts claims frequently attended with the right of publicity. Section V addresses the defenses applicable to such a claim, particularly the First Amendment privilege. Section VI discusses exemplary state right of publicity statutes, and Section VII presents post mortem rights of publicity.

II. DEFINING THE RIGHT OF PUBLICITY

The right of publicity is the inherent right of every human being to control the commercial use of his or her identity.[1] It has become an autonomous legal category, distinct from the kindred law of trademark, copyright, false advertising, and right of privacy. The right of publicity is a state law created intellectual property right, the infringement of which is recognized as unfair competition.[2]

The right of publicity was begotten by Judge Frank in the 1953 landmark *Haelan Labs., Inc. v. Topps Chewing Gum, Inc.* case.[3] Prior to its birth, right of publicity claimants tried to assert rights under the rubric of a right of privacy claim. Such assertions, however, were awkward at best. Prior to 1953, the four torts constituting the right of privacy provided the only vehicle for plaintiffs confronted with commercial exploitations of their identity.[4] An invasion of privacy by appropriation was often relied upon by

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[1] J. THOMAS MCCARTHY, THE RIGHTS OF PUBLICITY & PRIVACY § 1.1(A)(1) (1995).

[2] *Id.*

[3] 202 F.2d 866, 868 (2d Cir.), *cert. denied*, 346 U.S. 816 (1953).

[4] Professor Prosser's four categories of right of privacy are: (1) intrusion upon plaintiff's physical solitude; (2) public disclosure of embarrassing private facts; (3) placing the plaintiff in a false light in the public eye; and (4) appropriation for commercial benefit of the plaintiff's name or likeness. *See* W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS § 17 (5th ed. 1984).

notifying the defendant of the players' previous exclusive contracts. Because of the legal precedent at that time, the plaintiff's only possible cause of action was under the traditional right of privacy cause of action for misappropriation. As the court noted, however, the plaintiff's claims did not fit under this framework, which granted only a "personal and non-assignable right not to have his feelings hurt by such a publication."[10] Recognizing the inflexibility of the right of privacy, the court went on to state that:

> We think that, in addition to and independent of that Right of Privacy . . . , a man has a right in the publicity value of his photograph, *i.e.*, the right to grant exclusive privilege of publishing his picture. . . . Whether it be labeled a 'property' right is immaterial; for here, as often elsewhere, the tag 'property' simply symbolizes the fact that courts enforce a claim which has pecuniary worth.
>
> This right might be called a 'right of publicity.' For it is common knowledge that many prominent persons (especially actors and ball-players), far from having their feeling bruised through public exposure of their likenesses, would feel sorely deprived if they no longer received money for authorizing advertisements, popularizing their countenances, displayed in newspapers, magazines, busses [sic], trains and subways. This right of publicity would usually yield them no money unless it could be made the subject of an exclusive grant which barred any other advertiser from using their pictures.[11]

Thus, the *Haelan* court, sitting in diversity and applying New York law, consummated the legal category of a right of publicity. It was no longer necessary for famous plaintiffs to tailor their cause of action under the right of privacy framework that was discordant with their commercial interests.

While the right of publicity was born in the 1953 *Haelan* decision, its personality was developed one year later in Melville Bernard Nimmer's

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[10] *Id.*

[11] *Id.*

III. ELEMENTS OF THE RIGHT OF PUBLICITY

As stated above, the right of publicity is a state law created intellectual property right. Therefore, there is no decisive recitation of the exact elements constituting the prima facie case for a right of publicity claim other than looking at the particular state law applicable. However, as a generalization, to succeed in a right of publicity cause of action, a plaintiff must establish and prove at least the following elements:

1. Validity. Plaintiff owns an enforceable right in the identity or persona of a human being.

2. Infringement.

   a. Defendant, without permission, has used some aspect of identity or persona in such a way that plaintiff is identifiable from defendant's use.

   b. Defendant's use is likely to cause damage to the commercial value of that persona.[16]

Although these elements have not been adopted verbatim by any court, McCarthy's treatise on the right of publicity has often been cited by courts dealing with this issue.[17] What is clear, however, is that the right of publicity claimant must prove ownership of a property right in some identity or persona which is identifiable and has been taken for a commercial advantage or purpose. While various courts and statutes may state the elements of a right of publicity cause of action in somewhat different terms, as a generalization, these cases often involve three issues. First, a frequent relevant inquiry is whether or not the plaintiff has an enforceable right, i.e. whether some identifiable characteristic of his or her persona has been taken. Second, the fame status of the plaintiff frequently is pertinent, particularly in a minority of states, because people must identify the taken identity or persona as being associated with the plaintiff.

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[16] MCCARTHY, *supra* note 1, § 3.1[B].

[17] *See, e.g.*, Waits v. Frito-Lay Inc., 978 F.2d 1093, 1098, 23 U.S.P.Q.2d (BNA) 1721, 1726 (9th Cir. 1992), *cert. denied*, 506 U.S. 1080 (1993).

A distinctive voice, particularly of a well-known singer, has also been deemed an identifying persona. In *Midler v. Ford Motor Co.*,[21] the Ninth Circuit held that the distinctive voice of Bette Midler may constitute an identifiable persona. The Ninth Circuit expounded that "when a distinctive voice of a professional singer is widely known and is deliberately imitated in order to sell a product, the sellers have appropriated what is not theirs."[22] Similarly, in *Waits v. Frito Lay, Inc.*,[23] the defendant, Frito Lay, promoted one of its products with an advertisement incorporating a singer imitating the voice of Tom Waits. Waits was famous for his "raspy" singing voice, which was effectively imitated in the Frito Lay advertisement. Waits then sued for, among other things, the right of publicity. The defendant asserted that the decision in *Midler* should be overruled because the right of publicity as related to musical works is preempted by the copyright laws. The court, however, dispelled this argument stating that Waits has a right of publicity in controlling the use of his identity as embodied in his voice.

The court, relying on *Midler*, reiterated that an identifiable voice may designate a person's identity.[24] The defendant countered that even so, Waits had not achieved Bette Midler's level of celebrity.[25] The Ninth Circuit dispelled this argument when it pronounced "'[w]ell known' is a relative term, and differences in the extent of celebrity are adequately reflected in the amount of damages recoverable."[26]

A photograph of an article frequently associated with a celebrity may also constitute an identifiable characteristic. This was the circumstance in

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[21] 849 F.2d 460, 463, 7 U.S.P.Q.2d (BNA) 1398, 1400 (9th Cir. 1988), *appeal after remand*, 944 F.2d 909, *reported in full*, 22 U.S.P.Q.2d (BNA) 1478 (9th Cir. 1991), *cert. denied*, 503 U.S. 951 (1992).

[22] *Id.*

[23] 978 F.2d 1093, 1096, 23 U.S.P.Q.2d (BNA) 1721, 1723-24 (9th Cir. 1992), *cert. denied*, 506 U.S. 1080 (1993).

[24] *Id.* at 1099-1100, 23 U.S.P.Q.2d (BNA) at 1726.

[25] *Id.* at 1102, 23 U.S.P.Q.2d (BNA) at 1727.

[26] *Id.*; *see also* Motschenbacher v. R.J. Reynolds Tobacco Co., 498 F.2d 821, 824 n.11 (9th Cir. 1974) (stating the greater the fame, the greater the damages recoverable).

Electronics, ran nationally circulated advertisements depicting a Samsung electronic product set in a twenty-first century environment. In this advertising spoof, Samsung depicted a robot dressed in a wig, gown, and jewelry selected to imitate White's hair and dress. The robot was posed next to a game board instantly recognizable as a "Wheel of Fortune" set in a stance often associated with White. White neither consented to the advertisement nor was paid for it, and therefore brought, among other claims, a right of publicity cause of action under California common law. The Ninth Circuit, relying on *Midler* and *Motschenbacher*, reiterated that the right of publicity is not limited to the appropriation of name or likeness per se. Also relying on *Carson*, the court stated:

> It is not important *how* the defendant has appropriated the plaintiff's identity, but *whether* the defendant has done so. *Motschenbacher*, *Midler* and *Carson* teach the impossibility of treating the rights of publicity as guarding only against a laundry list of specific means of appropriating identity. A rule which says that the right of publicity can be infringed only through the use of nine different methods of appropriating identity merely challenges the clever advertising strategists to come up with the tenth.[32]

There may be a situation where a person's name may be taken, yet no right of publicity claim applies. This issue was addressed by the Third Circuit in *McFarland v. Miller*.[33] Applying New Jersey law, the court analyzed the plaintiff's right of publicity in his name and image. Plaintiff was a personal representative of George "Spanky" McFarland who played Spanky in the "Our Gang" series and the "Little Rascal" television series. Defendant owned a restaurant named "Spanky McFarland." The restaurateur posted various "Little Rascal" displays and pictures in the restaurant, and menu items were named after "Little Rascal" characters. The Third Circuit stated that the district court erred by not recognizing that an actor, who portrays a character in a manner causing the character to become inextricably intertwined with the individual to an extent that the individual comes to utilize the character's names as his or her own, has a proprietary interest in the exploitation of the name or image. The court stated that "[a]t

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[32] *Id.* at 1398, 23 U.S.P.Q.2d (BNA) at 1585 (emphasis in original).

[33] 14 F.3d 912, 914-16, 29 U.S.P.Q.2d (BNA) 1586, 1587-89 (3d Cir. 1994).

Gregory Peck's role as General MacArthur, George C. Scott's role as General Patton, James Whitmore's role as Will Rogers, Charlton Heston's role as Moses, and Bella Lugosi's role as Dracula.[41] The judge believed that these actors had no proprietary interest in their roles because the roles they played had not become intertwined with their own public image. Although the court did not rule whether McFarland did in fact become indistinguishable in the public eye from his stage persona of Spanky, the court aptly outlined the situations wherein the taking of a name may in fact not constitute a right of publicity.

B. *Who Is Identifiable?*

Although the right of publicity itself arose due to the inadequacies of the right of privacy causes of action in protecting celebrities, it does not necessarily follow that it is limited only to celebrities. A minority of courts hold that only celebrities have a right of publicity.[42]

The opinion of a majority of courts, and the authors, is that non-celebrities also have a right of publicity. The difference achieves relevancy only when damages are calculated.[43] For instance, in *Waits*, the court stated that notoriety is a relative term, and is relevant only in damage determinations.[44] Moreover, the court in *Motschenbacher* stated that

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[41] McFarland v. Miller, 14 F.3d 912, 920 n.14, 29 U.S.P.Q.2d (BNA) 1586, 1593 n.14 (3d Cir 1994).

[42] *See, e.g.*, Ali v. Playgirl, Inc., 447 F. Supp. 723, 729, 206 U.S.P.Q. (BNA) 1021, 1025 (S.D.N.Y. 1978) (the right of publicity is usually asserted only if the plaintiff possesses a celebrated status); Martin Luther King, Jr. Ctr. for Social Change, Inc. v. American Heritage Prods., Inc., 296 S.E.2d 697, 700, 216 U.S.P.Q. (BNA) 711, 716 (Ga. 1982) (stating in dictum that private citizens have a right of privacy and public figures have a similar right of publicity).

[43] *See* Waits v. Frito-Lay, Inc., 978 F.2d 1093, 1102, 23 U.S.P.Q.2d (BNA) 1721, 1727 (9th Cir. 1992), *cert. denied*, 506 U.S. 1080 (1993); Motschenbacher v. R.J. Reynolds Tobacco Co., 498 F.2d 821, 824-25 (9th Cir. 1974).

[44] *Waits*, 978 F.2d at 1102, 23 U.S.P.Q.2d (BNA) at 1727; *see also* Cheatham v. Paisano Publications, Inc., 891 F. Supp. 381, 386-87 (W.D. Ky. 1995) (Celebrity status is not required to sustain a right of publicity claim; plaintiff need only establish "a notoriety which is strong enough to have commercial value within an identifiable group.").

performer.[48] Thus, to sustain a claim of a right of publicity, the plaintiff must prove that the taking of his name or likeness was in fact for a commercial purpose and not merely incidental use. Moreover, there must be some showing that the name was taken to take advantage of the plaintiff's notoriety.

IV. ATTENDED CAUSES OF ACTION

As a practical matter, evidence related to a right of publicity claim should be examined to determine whether it may also support a right of privacy claim, a trademark infringement claim, or an action under section 43(a) of the Lanham Act.

As stated above, the right of publicity developed particularly due to the inadequacies of the protection afforded by the right of privacy with respect to famous plaintiffs. Nonetheless, it is not limited to famous plaintiffs, at least in the majority of courts. When confronted with facts seemingly supportive of a right of publicity claim, a plaintiff should also consider a right of privacy claim, specifically, the appropriation type, which focuses upon damage to human dignity.[49] Thus, a certain unauthorized use

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[48] *Id.* at 1463, 30 U.S.P.Q.2d (BNA) at 1638; *see also* Hooker v. Columbia Pictures Indus., Inc., 551 F. Supp. 1060, 1062 (N.D. Ill. 1982) (finding no commercial purpose when defendants use plaintiff's name for a television police drama but do not attempt to gain a commercial advantage due to the plaintiff's reputation as an extraordinary wood carver); Eastwood v. Superior Court, 198 Cal. Rptr. 342, 347 (Cal. Ct. App. 1983) (Clint Eastwood established the commercial exploitation element required under the California statute when the National Enquirer printed his picture along with an explicit caption for the purpose of attracting consumers' attention and to obtain a commercial advantage over its competitors). *But see* Namath v. Sports Illustrated, 371 N.Y.S.2d 10 (N.Y. App. Div. 1975), *aff'd*, 352 N.E.2d 584 (N.Y. 1976) (Sports Illustrated used a specific issue featuring Joe Namath on the cover in advertisements for the magazine, and the court found that the defendant's intent was to convey the type and content of stories found in the magazine, not to take commercial advantage of the football star's notoriety).

[49] *See supra* note 4 (naming the four types of right of privacy cause of actions). Professor Prosser has classified the collection of the privacy torts into four distinct categories. *See* Zacchini v. Scripps-Howard Broadcasting Co., 433 U.S. 562, 573, 205 U.S.P.Q. (BNA) 741, 747 (1977), *on remand*, 376

Section 43(a) of the Lanham Act prevents false endorsements by a person for a product or service.[53] Thus, facts necessary to support a right of publicity claim may also support a section 43(a) cause of action.[54] The difference between false endorsement and right of publicity is that falsity is required for false endorsement whereas falsity is not an essential element of a right of publicity claim.[55]

V. DEFENSES APPLICABLE TO A RIGHT OF PUBLICITY CLAIM

As discussed in Section III, the elements of a prima facie case for a right of publicity claim are governed by state law. As such, the available defenses to a right of publicity claim likewise are determined by the applicable state common and/or statutory law.[56] Nevertheless, a number of general affirmative defenses should be considered in defense of a right of publicity claim.

A. *Unauthorized Use*

The use of the individual's identity must be unauthorized to sustain a right of publicity claim. Therefore, the defendant will not be liable if the plaintiff consented to the use. Depending on the applicable state law, the requisite consent may be express or implied, and may be written or oral. According to McCarthy, the privacy and publicity statutes of six states require a consent or license of the right of publicity to be in writing.[57] The statutes of three states[58] indicate that consent is necessary, the implication

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[53] 15 U.S.C. § 1125(a) (1994).

[54] *See, e.g.*, Newton v. Thomason, 22 F.3d 1455, 1462, 30 U.S.P.Q.2d (BNA) 1633, 1637 (9th Cir. 1994).

[55] Waits v. Frito-Lay, Inc., 978 F.2d 1093, 1106-10, 23 U.S.P.Q.2d (BNA) 1721, 1730-34 (9th Cir. 1992), *cert. denied*, 506 U.S. 1080 (1993).

[56] *See infra* Section VI, discussing state right of publicity statutes.

[57] Massachusetts, New York, Rhode Island, Utah, Virginia, and Wisconsin. MCCARTHY, *supra* note 1, § 10.6[A].

[58] California, Oklahoma, and Tennessee.

White, the court dismissed the plaintiff's statutory claim because "attire" and "mannerisms" are not expressly protected.[65] Furthermore, as discussed, the use must sufficiently identify the plaintiff.[66]

C. *The First Amendment*

1. Protected Speech

A frequently litigated affirmative defense is that the plaintiff's right of publicity assertion constitutes an unconstitutional chill of expressive conduct under the First Amendment.[67] The Supreme Court recognized in *Zacchini* that whenever intangible property rights are privately enforced, the First Amendment is implicated.[68] Distinctions are made, however, between commercial and non-commercial speech.[69] In the case of commercial speech such as advertisements, the "First Amendment hurdle is not so high."[70] Accordingly, because the right of publicity requires an unauthorized use for a commercial advantage (at least according to most states' common law), the

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[65] *White*, 971 F.2d at 1397, 23 U.S.P.Q.2d (BNA) at 1585.

[66] *See supra* Section III.

[67] U.S. CONST. amend. I.

[68] Zacchini v. Scripps-Howard Broadcasting Co., 433 U.S. 562, 569-70, 205 U.S.P.Q. (BNA) 741, 745-46 (1977), *on remand*, 376 N.E.2d 582 (Ohio 1978); *see also* L.L. Bean, Inc. v. Drake Publishers, Inc., 811 F.2d 26, 30 n.2, 1 U.S.P.Q.2d (BNA) 1753, 1756 n.2 (1st Cir.), *cert. denied, appeal dismissed*, 483 U.S. 1013 (1987).

[69] White v. Samsung Elec. Am., Inc., 971 F.2d 1395, 1401 n.3, 23 U.S.P.Q.2d (BNA) 1583, 1588 n.3 (9th Cir. 1992), *reh'g en banc denied*, 989 F.2d 1512, 26 U.S.P.Q.2d (BNA) 1362 (9th Cir. 1993), *cert. denied*, 113 S. Ct. 2443 (1993). *But see*, Carson v. Here's Johnny Portable Toilets, Inc., 698 F.2d 831, 841, 218 U.S.P.Q. (BNA) 1, 4-5 (6th Cir. 1983) (Kennedy, J., dissenting) (First Amendment considerations bar phrases such as "Here's Johnny" under a right of publicity).

[70] *White*, 971 F.2d at 1401 n.3, 23 U.S.P.Q. (BNA) at 1588 n.3 (citing Central Hudson Gas & Electric Corp. v. Public Service Comm'n, 447 U.S. 557, 566 (1980)).

farther, however, by advertising the interview in a manner implying Cher endorsed its magazine when, in fact, she had not. This commercial exploitation, the court found, was not protected by the First Amendment.[76]

A more recent case illustrating promotions of newsworthy publications is *Montana v. San Jose Mercury News, Inc.*[77] In that case, a San Jose newspaper celebrated the San Francisco 49'ers 1990 Super Bowl victory with a special "Souvenir Section." The souvenir section included an artist's rendition of Joe Montana on the front page. Each page of the section was thereafter reproduced in poster form and sold to the general public. Montana brought common law and statutory actions for commercial misappropriation of his name, photograph, and likeness against the San Jose newspaper. The newspaper defended by alleging that its souvenir section and posters were "contemporaneous reproductions" of the newspaper accounts of the Super Bowl and, therefore, entitled to the same First Amendment protections afforded the news accounts. The California court agreed, thereby dispelling Montana's claim that the newspaper used his face and name solely for commercial reasons. Relying on *Cher*, for example, the court found that the posters were advertisements of the quality and content of the San Jose newspaper.[78]

Private enforcement of non-commercial speech was exemplified in *New Kids on the Block v. News America Publishing, Inc.*,[79] wherein a teen magazine used the names of the members of a popular rock music group in

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[76] *Cher*, 692 F.2d at 639, 217 U.S.P.Q. (BNA) at 410.

[77] Montana v. San Jose Mercury News, Inc., 40 Cal. Rptr. 2d 639, 35 U.S.P.Q.2d (BNA) 1783 (Cal. Ct. App. 1995), *modified*, 35 Cal. App. 4th 813 (1995).

[78] *Id.* at 642, 35 U.S.P.Q.2d (BNA) at 1786. It is the authors' opinion, however, that the Court of Appeal of California took the decision in *Cher* too far. In *Cher*, Cher's picture was used to promote the article in Forum's magazine; additional fees were not charged for the advertisement. The authors opine that, in *Montana*, the posters were not sold to promote the newspaper; rather, they were sold as commercial products, per se. Even though the posters were exact reproductions of pages of the newspaper, consumers do not normally pay for an advertisement.

[79] 745 F. Supp. 1540, 16 U.S.P.Q.2d (BNA) 1283 (C.D. Cal. 1990), *aff'd on other grounds*, 971 F.2d 302, 23 U.S.P.Q.2d (BNA) 1534 (9th Cir. 1992).

decision, *Cardtoons, L.C. v. Major League Baseball Players Association*,[87] it was articulated that a "parody may be commercial in two ways: to advertise a separate product, or, as the product."[88]

The former was exemplified by *White*, wherein the parody, comprising the Vanna White imitating-robot, was an advertisement for electronic products. The arguments directed to a parody defense were unpersuasive in light of the commercial exploitation involved.[89] The latter commercial use occurred in *Cardtoons* wherein the defendants sold baseball trading cards containing images of baseball players on the front and biographical material on the back, both of which were exaggerated.[90] Therefore, the product itself was the parody, was deemed to be commercial, and was afforded lesser First Amendment protections. Accordingly, the parody defense may be forceful, but its powers are greatly diminished if the parody is used for commercial purposes.

D. *Federal Preemption*

It has been argued, albeit unsuccessfully, that state statutory laws concerning the right of publicity are preempted by federal copyright law.[91] In *Zacchini*, the U.S. Supreme Court expressly endorsed a state right of publicity law harmonious with federal copyright laws.[92] Clearly, if a state statute is directly in conflict with a federal comprehensive scheme, such as

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(1993). *But see L.L. Bean*, 811 F.2d at 30, 1 U.S.P.Q.2d (BNA) at 1756 (finding a non-commercial parody).

[87] 868 F. Supp. 1266 (N.D. Okla. 1994).

[88] *Id.* at 1272-73.

[89] *White*, 971 F.2d at 1401, 23 U.S.P.Q.2d (BNA) at 1588.

[90] *Cardtoons*, 868 F. Supp. at 1268.

[91] Waits v. Frito-Lay, Inc., 978 F.2d 1093, 1096, 23 U.S.P.Q.2d (BNA) 1721, 1724 (9th Cir. 1992), *cert. denied*, 506 U.S. 1080 (1993).

[92] Zacchini v. Scripps-Howard Broadcasting Co., 433 U.S. 562, 578-79, 205 U.S.P.Q. (BNA) 741, 749 (1977), *on remand*, 376 N.E.2d 582 (Ohio 1978).

also have pertinent statutory provisions.[97] Moreover, ten states have statutes which may not refer specifically to the right of publicity but which in some way protect some aspects of it.[98] All in all, according to McCarthy, a total of twenty-five different states recognize the right of publicity under the common law, by statute, or both. Only two states, according to McCarthy's tabulation, have expressly rejected a common law right of publicity.[99]

Disparate approaches to the right of publicity are best epitomized by California's and New York's statutory and common law treatment of this cause of action. Attached in the Appendix to this Article are the relevant portions of both the New York and California statutes.[100]

The New York code sets forth New York's statutory scheme for protecting persona. A plaintiff in a New York court, or a foreign court applying New York law under its choice of law analysis, may only allege a statutory cause of action. New York does not recognize a common law right of publicity.[101] The New York statute provides injunctive relief and criminal penalties for the use of the "name, portrait, or picture of any living person" for "advertising purposes, or for the purposes of trade" without permission.[102] The New York statute, however, is limited to clear appropriation of the identity of a person.

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[97] *Id.*

[98] Indiana, Kentucky, Massachusetts, Nebraska, Nevada, New York, Oklahoma, Rhode Island, Tennessee, and Virginia. A comparative listing of the state statutes appears in MCCARTHY, *supra* note 1, § 6.3[A]. *See also id.* § 6.1[B].

[99] Nebraska and New York. *See* MCCARTHY, *supra* note 1, § 6.1[B].

[100] N.Y. CIV. RIGHTS LAW §§ 50-51 (1994); CAL. CIV. CODE §§ 990, 3344 (1995).

[101] Pirone v. MacMillan, Inc., 894 F.2d 579, 585, 13 U.S.P.Q.2d (BNA) 1799, 1803 (2d Cir. 1990).

[102] N.Y. CIV. RIGHTS LAW § 50 (1994). It is imperative to note, however, that this provision is referred to as New York's right of privacy statute.

two.[108] Under the California Civil Code, there must be an allegation of a "knowing" use of plaintiff's name, photograph, or likeness for the purpose of advertising or solicitation of purchases. "Knowing," however, is not required under the common law. Moreover, according to a judicial construction of section 3344, a "direct" connection must be established between the use and the commercial purpose.[109] Eastwood established both that the *Enquirer* knowingly used his persona for a commercial purpose and that purpose was connected with the defendant's use—to attract readers by implying that Eastwood endorsed the newspaper.[110] The court, interpreting section 3344 of the California Civil Code, stated that Eastwood's personality and fame were taken for commercial exploitation, thereby implying that one's personality and fame falls within the purview of the statutory language "name, photograph, or likeness."[111] Thus, Eastwood was successful in asserting both right of publicity claims.

VII. POST MORTEM RIGHT OF PUBLICITY

A celebrity's notoriety does not terminate upon that celebrity's death. In fact, the notoriety of some celebrities may even escalate after their death. Issues of inheritability, descendability, and assignability become relevant because a celebrity's name or likeness can be usurped without permission for commercial advantage just as easily after their death as before. These issues become particularly relevant when considering which parties have standing to protect the decedent's right of publicity. Again, the relevant state statutory and common laws are germane to these issues; however, several generalizations can be made.

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[108] *Id.* at 347.

[109] *Id.* (citing Johnson v. Harcourt, Brace, Jovanovich, Inc., 118 Cal. Rptr. 370, 381 (1974)).

[110] *Id.* at 349.

[111] *Id. But see* White v. Samsung Elec. Am., Inc., 971 F.2d 1395, 1397, 23 U.S.P.Q.2d (BNA) 1583, 1584 (9th Cir. 1992), *amended*, 1992 U.S. App. LEXIS 19, 253 (9th Cir. 1992), *reh'g en banc denied*, 989 F.2d 1512, 26 U.S.P.Q.2d (BNA) 1362 (9th Cir. 1993), *cert. denied*, 113 S. Ct. 2443 (1993) (holding that a robot with mechanical features of White, as opposed to "for example, a mannequin molded to White's precise features," is not within the scope of "likeness" of section 3344).

destroy, the value of the right of continued commercial use.[116]

In *McFarland v. Miller*,[117] the Third Circuit also found that the right of publicity is proprietary in nature and is descendible under the laws of New Jersey. The Third Circuit further held that it does not make a difference whether or not the infringement took place during the celebrity's lifetime.[118] In *McFarland*, as previously discussed, George McFarland, "Spanky," brought a right of publicity claim against the owner of a restaurant. George McFarland, however, passed away while his appeal was entertained.[119] In *McFarland*, the infringement took place during George McFarland's lifetime, and the court compared this factual situation with that of the *Estate of Presley v. Russen*,[120] wherein the U.S. District Court for the District of New Jersey also found that the common law right of publicity is descendible under New Jersey law.[121] However, in that case, the estate of Elvis Presley asserted the late singer's right of publicity to enjoin the performance of a stage show employing Presley imitators.[122] Therefore, the infringement there occurred after the death of Elvis Presley, and yet a right of publicity claim was successfully alleged.[123]

At least one court, the U.S. District Court for the District of Utah, continues to hold that although the right of publicity does survive the death of its owner, that right must have been commercially exploited during the lifetime of the celebrity. In *Nature's Way Products, Inc. v. Nature-Pharma,*

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[116] *Id.*

[117] 14 F.3d 912, 29 U.S.P.Q.2d (BNA) 1856 (3d Cir. 1994).

[118] *Id.* at 917, 29 U.S.P.Q.2d (BNA) at 1590.

[119] *Id.*

[120] 513 F. Supp. 1339, 211 U.S.P.Q. (BNA) 415 (D.N.J. 1981).

[121] *McFarland*, 14 F.3d at 917, 29 U.S.P.Q.2d (BNA) at 1590 (citing *Estate of Presley*, 513 F. Supp. at 1339, 211 U.S.P.Q. (BNA) at 415).

[122] *Estate of Presley*, 513 F. Supp. at 1355, 211 U.S.P.Q. (BNA) at 422.

[123] *Id.* at 1355, 211 U.S.P.Q. (BNA) at 432.

construed the Tennessee and California common laws as expressly rejecting this proposition.[129] For example, in *Memphis Dev. Foundation v. Factors Etc., Inc.*, the exclusive licensee of the estate of Elvis Presley brought suit against a non-profit project which was giving away pewter replicas of the statue of "The King" to contributors.[130] The court's rationale for this finding was that the basic motivation for fame is the desire to achieve success or excellence in a chosen field and "the desire to exploit fame for the commercial advantage of one's heirs is by contrast a weak principle of motivation."[131] The court rationalized that if the right of publicity were inheritable, there would be no inspiration to pursue creative endeavors in our society.[132] The court concluded that "fame falls in the same category as reputation; it is an attribute from which others may benefit but may not own."[133]

In California, no common law post mortem right of publicity exists, but such rights are statutorily provided for in section 990(a) of the California Civil Code.[134] For example, in two 1979 cases, the Supreme Court of California held that California recognizes a common law right of publicity, but this right does not survive the individual.[135] In *Guglielmi v. Spelling-*

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[129] Factors Etc., Inc. v. Pro Arts, Inc., 652 F.2d 278, 211 U.S.P.Q. (BNA) 1 (2d Cir. 1981) (applying Tennessee law), *cert. denied*, 456 U.S. 927 (1982), *on remand*, 541 F. Supp. 231 (S.D.N.Y. 1982), *vacated*, 562 F. Supp. 304 (S.D.N.Y. 1983), *reh'g denied*, 701 F.2d 11 (2d Cir. 1983); Memphis Dev. Foundation v. Factors Etc., Inc., 616 F.2d 956, 205 U.S.P.Q. (BNA) 784 (6th Cir. 1980) (applying Tennessee law), *cert. denied*, 449 U.S. 953 (1980); Groucho Marx Prods. v. Day and Night Co., 689 F.2d 317, 216 U.S.P.Q. (BNA) 553 (2d Cir. 1982) (applying California law); *cf.* CAL. CIV. CODE § 990(g) (1995) (*see* Appendix) (California grants postmortem rights by statute, but only for fifty years after the person's death).

[130] *Memphis Dev. Foundation*, 616 F.2d at 957, 205 U.S.P.Q. (BNA) at 786.

[131] *Id.* at 958-59, 205 U.S.P.Q. (BNA) at 787.

[132] *Id.* at 959, 205 U.S.P.Q. (BNA) at 787.

[133] *Id.*

[134] CAL. CIV. CODE § 990(a) (1995) (*see* Appendix).

[135] Guglielmi v. Spelling-Goldberg Prods., 603 P.2d 454, 205 U.S.P.Q. (BNA) 1116 (Cal. 1979); Lugosi v. Universal Pictures, 603 P.2d 425, 205 U.S.P.Q. (BNA) 1090 (Cal. 1979) (*per curiam*).

APPENDIX

N.Y. Civ. Rights Law § 50 (1994)

§ 50. Right of Privacy

A person, firm or corporation that uses for advertising purposes, or for the purposes of trade, the name, portrait or picture of any living person without having first obtained the written consent of such person, or if a minor of his or her parent or guardian, is guilty of a misdemeanor.

N.Y. Civ. Rights Law § 51 (1994)

§ 51. Action For Injunction And For Damages

Any person whose name, portrait or picture is used within this state for advertising purposes or for the purposes of trade without the written consent first obtained as above provided may maintain an equitable action in the supreme court of this state against the person, firm or corporation so using his name, portrait or picture, to prevent and restrain the use thereof; and may also sue and recover damages for any injuries sustained by reason of such use and if the defendant shall have knowingly used such person's name, portrait or picture in such manner as is forbidden or declared to be unlawful by section fifty of this article, the jury, in its discretion, may award exemplary damages. But nothing contained in this article shall be so construed as to prevent any person, firm or corporation from selling or otherwise transferring any material containing such name, portrait or picture in whatever medium to any user of such name, portrait or picture, or to any third party for sale or transfer directly or indirectly to such a user, for use in a manner lawful under this article; nothing contained in this article shall be so construed as to prevent any person, firm or corporation, practicing the profession of photography, from exhibiting in or about his or its establishment specimens of the work of such establishment, unless the same is continued by such person, firm or corporation after written notice objecting thereto has been given by the person portrayed; and nothing contained in this article shall be so construed as to prevent any person, firm or corporation from using the name, portrait or picture of any manufacturer or dealer in connection with the goods, wares and merchandise manufactured, produced or dealt in by him which he was sold or disposed

(2) If the photograph includes more than one person so identifiable, then the person or persons complaining of the use shall be represented as individuals rather than solely as members of a definable group represented in the photograph. A definable group includes, but is not limited to, the following examples: a crowd at any sporting event, a crowd in any street or public building, the audience at any theatrical or stage production, a glee club, or a baseball team.

(3) A person or persons shall be considered to be represented as members of a definable group if they are represented in the photograph solely as a result of being present at the time the photograph was taken and have not been singled out as individuals in any manner.

(c) Where a photograph or likeness of an employee of the person using the photograph or likeness appearing in the advertisement or other publication prepared by or in behalf of the user is only incidental, and not essential, to the purpose of the publication in which it appears, there shall arise a rebuttable presumption affecting the burden of producing evidence that the failure to obtain the consent of the employee was not a knowing use of the employee's photograph or likeness.

(d) For purposes of this section, a use of a name, voice, signature, photograph, or likeness in connection with any news, public affairs, or sports broadcast or account, or any political campaign, shall not constitute a use for which consent is required under subdivision (a).

(e) The use of a name, voice, signature, photograph, or likeness in a commercial medium shall not constitute a use for which consent is required under subdivision (a) solely because the material containing such use is commercially sponsored or contains paid advertising. Rather it shall be a question of fact whether or not the use of the person's name, voice, signature, photograph, or likeness was so directly connected with the commercial sponsorship or with the paid advertising as to constitute a use for which consent is required under subdivision (a).

(f) Nothing in this section shall apply to the owners or employees of any medium used for advertising, including, but not limited to, newspapers, magazines, radio and television networks and stations, cable television systems, billboards, and transit ads, by whom any advertisement or solicitation in violation of this section is published or

been transferred in accordance with subdivision (b), or if no such transfer has occurred, then by the person or persons to whom the right of consent (or portion thereof) has passed in accordance with subdivision (d).

(d) Subject to subdivisions (b) and (c), after the death of any person, the rights under this section shall belong to the following person or persons and may be exercised, on behalf of and for the benefit of all of those persons, by those persons who, in the aggregate, are entitled to more than a one-half interest in the rights:

(1) The entire interest in those rights belong to the surviving spouse of the deceased personality unless there are any surviving children or grandchildren of the deceased personality, in which case one-half of the entire interest in those rights belong to the surviving spouse.

(2) The entire interest in those rights belong to the surviving children of the deceased personality and to the surviving children of any dead child of the deceased personality unless the deceased personality has a surviving spouse, in which case the ownership of a one-half interest in rights is divided among the surviving children and grandchildren.

(3) If there is no surviving spouse, and no surviving children or grandchildren, then the entire interest in those rights belong to the surviving parent or parents of the deceased personality.

(4) The rights of the deceased personality's children and grandchildren are in all cases divided among them and exercisable in the manner provided in Section 240 of the Probate Code according to the number of the deceased personality's children represented; the share of the children of a dead child of a deceased personality can be exercised only by the action of a majority of them.

(e) If any deceased personality does not transfer his or her rights under this section by contract, or by means of a trust or testamentary document, and there are no surviving persons as described in subdivision (d), then the rights set forth in subdivision (a) shall terminate.

. . . .

cable television systems, billboards, and transit ads, by whom any advertisement or solicitation is violation of this section is published or disseminated, unless it is established that the owners or employees had knowledge of the unauthorized use of the deceased personality's name, voice, signature, photograph, or likeness as prohibited by this section.

(m) The remedies provided for in this section are cumulative and shall be in addition to any others provided for by law.

(n) This section shall not apply to the use of a deceased personality's name, voice, signature, photograph, or likeness, in any of the following instances:

(1) A play, book, magazine, newspaper, musical composition, film, radio or television program, other than an advertisement or commercial announcement not exempt under paragraph (4).

(2) Material that is of political or newsworthy value.

(3) Single and original works of art.

(4) An advertisement or commercial announcement for a use permitted by paragraph (1), (2), or (3).

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ON DEFINING THE CONCEPT OF INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS IN ALGORITHMS AND OTHER ABSTRACT COMPUTER-RELATED IDEAS

Richard H. Stern[*]

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I. INTRODUCTION

This article extrapolates from the concepts of copyright infringement[1] and patent infringement[2] under existing law, to define a concept of infringement of intellectual property rights in computer-related abstract ideas,[3] such as algorithms,[4] data structures,[5] computerized methods of doing

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[1] The copyright laws are contained in 17 U.S.C. §§ 101–810 (1994). The provisions most pertinent to copyright infringement are in 17 U.S.C. § 106.

[2] The patent laws are contained in 35 U.S.C. §§ 1–376 (1994). The provisions most pertinent to patent infringement are in 35 U.S.C. § 271.

[3] Abstract aspects of software (hereafter termed "software abstractions") are to be contrasted with literal, concrete aspects: the lines of object or source code, the instructions expressed as code or flowchart, the documentation, and particular screen displays regarded as pictorial or audiovisual works.

[4] The term "algorithm," as it is used here, means a finite, clearly defined series of steps describing a procedure for accomplishing a specified mathematical or data-manipulation task to be performed by means of a computer or other machine. *See generally* Diamond v. Diehr, 450 U.S. 175, 186 n.9, 209 U.S.P.Q. (BNA) 1, 7–8 n.9 (1981) (stating several definitions of "algorithm"). Other definitions of "algorithm" are found in the following dictionaries and similar authorities: ACADEMIC PRESS DICTIONARY OF SCIENCE AND TECHNOLOGY 75 (C. Morris ed., 1992) (abstract procedure to carry out operation by following series of precise, unambiguous steps); ALAN FREEDMAN, COMPUTER GLOSSARY 10 (1993) (set of ordered steps for solving problem); ALLEN L. WYATT, COMPUTER PROFESSIONAL'S DICTIONARY 14 (1990) (well defined set of rules for solving problem). Computer science texts are similar. *See, e.g.*, ALFRED V. AHO AND JEFFREY D. ULLMAN, FOUNDATIONS OF COMPUTER SCIENCE 5 (1992) (precise, unambiguous specification of sequence of steps, most often expressed formally as programs in a programming language).

An algorithm may be considered a generic or abstract formulation of a computer program embodying or carrying out the algorithm. *See* Allen Newell, *The Models Are Broken, the Models Are Broken!*, 47 U. PITT. L. REV. 1023, 1029 (1986) ("An algorithm is just an abstract program, which is to say, just an abstract specification. . . . An algorithm is more abstract than a program. Given an algorithm, it is possible to code it up in any programming language."). Newell also states that the difference between computer program and algorithm is a matter of degree, and that a continuum is involved. *Id.* at 1030.

property rights are hypothetical, as yet, because under existing copyright[9] and patent[10] law, abstract ideas are in principle unprotectable.[11] Moreover,

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A second meaning of the term "instruction" is an abstraction or generic formulation of "instruction" in the previous sense. Thus, INCREMENT, MOVE, and GOTO are the generic instructions (operations) of which the statements INCREMENT a, MOVE (a,b), and GOTO alpha are specific instantiations. An instruction set is a set of instructions (operations) in the second of the two senses. In other words, it is a set of ideas, while a computer program is a set of expressions.

For a further discussion of instructions in computer programming languages and in command structures (a specialized kind of computer programming language used in some application programs), see Richard H. Stern, *Copyright in Computer Programming Languages*, 17 RUTGERS COMPUTER & TECH. L.J. 321, 327–30, 344–46 (1991) [hereinafter *Programming Languages*]. See also Motorola, Inc. v. Hitachi, Ltd., 750 F. Supp. 1319, 1327–29, 14 U.S.P.Q.2d (BNA) 1769, 1774–77 (W.D. Tex.), *vacated*, 923 F.2d 868 (Fed. Cir. 1992), which involved a dispute over whether a Hitachi microprocessor chip used substantially the same instruction set as a Motorola microprocessor chip. One issue was whether the meaning of "instruction set" for purposes of the license agreement was the conceptual representation of the instructions (e.g., INCREMENT, MOVE) or the particular machine language (binary code) representations of them used in the parties' respective chips. The district court found that the ordinary industry usage of "instruction set" was the former, and therefore interpreted the agreement in that sense. *Id.* at 1328, 14 U.S.P.Q.2d (BNA) at 1775–76.

[9] Feist Pubs., Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 350 18 U.S.P.Q.2d (BNA) 1275, 1280 (1991) (discussing fact/expression dichotomy); Baker v. Selden, 101 U.S. 99 (1879).

[10] Diamond v. Diehr, 450 U.S. 175, 185, 209 U.S.P.Q. (BNA) 1, 16 (1981); *In re* Trovato, 42 F.3d 1376, 1381, 33 U.S.P.Q.2d (BNA) 1194, 1198 (Fed. Cir. 1994), *vacated on other grounds*, 60 F.3d 807, 35 U.S.P.Q.2d (BNA) 1570 (Fed. Cir. 1995).

[11] As the Supreme Court has said, one cannot get a patent on the idea that rubber sticks to wood, Rubber–Tip Pencil Co. v. Howard, 87 U.S. (20 Wall.) 498, 506–07 (1874), or that some bacteria will not inhibit the growth of other bacteria. Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 132, 76 U.S.P.Q. (BNA) 280, 282 (1948). The Court has insisted that patents must be tied to particular machinery for implementing an idea, or some other concrete anchor. Otherwise, one who discovers one way of implementing an idea may receive a patent so broad that it will stifle the creativity of those who might develop other, perhaps better, ways of implementing the

under a copyright rubric,[13] but a series of recent decisions[14] greatly dampened these hopes.[15]

This has turned attention to patent protection of software abstractions. In response, the Patent and Trademark Office ("PTO") has recently proffered some protection of this kind.[16] This proffer may be an

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[13] *See, e.g.*, Whelan Assocs., Inc. v. Jaslow Dental Lab., Inc., 797 F.2d 1222, 1230 U.S.P.Q. (BNA) 481 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987); Lotus Dev. Corp. v. Paperback Software Int'l, 740 F. Supp. 37, 15 U.S.P.Q.2d (BNA) 1577 (D. Mass. 1990); Pearl Sys., Inc. v. Competition Elecs., Inc., 8 U.S.P.Q.2d (BNA) 1520 (S.D. Fla. 1988).

[14] *See, e.g.*, Lotus Dev. Corp. v. Borland Int'l, 49 F.3d 807, 34 U.S.P.Q.2d (BNA) 1014 (1st Cir. 1995), *rev'g* 799 F. Supp. 203 (D. Mass. 1992), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996) (per curiam); Apple Computer, Inc. v. Microsoft Corp., 35 F.3d 1435, 32 U.S.P.Q.2d (BNA) 1086 (9th Cir. 1994), *cert. denied*, 115 S. Ct. 1176 (1995); Gates Rubber Co. v. Bando Chem. Indus., Ltd., 9 F.3d 823, 28 U.S.P.Q.2d (BNA) 1503 (10th Cir. 1993); Computer Assocs., Int'l v. Altai, Inc., 982 F.2d 693, 23 U.S.P.Q.2d (BNA) 1241 (2d Cir. 1992).

[15] *See* PTO Press Release, USPTO to Develop Guidelines to Protect Software Inventions (March 30, 1995) (on file with AIPLA Q.J.). The PTO gave as a reason for its decision to reverse its long-standing policy against allowing software abstraction patents that recent court decisions, *see, e.g., Lotus-Borland*, have been "decreasing the availability of protection for certain aspects of computer programs under the copyright laws." *Id.* The PTO stated that failure to provide patent protection for software advances "could jeopardize effective intellectual property protection for one of our nation's most important industries," noting that the computer software industry was a major factor in U.S. world trade and a substantial contributor to the Gross Domestic Product. *Id.* PTO officials, speaking before various groups, have indicated that concern over recent copyright decisions denying copyright protection to nonliteral aspects of computer programs was a major, perhaps decisive, factor causing the PTO to reverse its position on software abstraction patents.

[16] Proposed Examination Guidelines for Computer-Implemented Inventions, 60 Fed. Reg. 28,778 (1995). In February 1996, the PTO made a substantially modified version of these guidelines final. Examination Guidelines for Computer-Implemented Inventions, 61 Fed. Reg. 7,478 (1996) [hereinafter Software Guidelines].

The Software Guidelines reflect an effort by the PTO to clarify the status of computer program and algorithm patent applications in the wake

protection of software abstract ideas under the existing patent statute, and

unpatentable. *Id.* at 7,484. This may indicate that the PTO envisions an initial presumption that a computer program encoded on a floppy disk is patentable subject matter, but this presumption can somehow be overcome in some unstated manner if the examiner becomes persuaded that the claimed floppy-disk subject matter, viewed as a whole, is really an algorithm and for some reason fails magically to "permit the computer program's functionality to be realized." *Cf. id.* at 7,482.

There are severe technical problems in the practical administration of a system in which patents are allowed on abstract ideas, and it is unclear how the PTO will overcome them. Criteria for determining unobviousness of ideas are undeveloped. *In re* Alappat, 33 F.3d 1526, 1568, 31 U.S.P.Q.2d (BNA) 1545, 1578 (Fed. Cir. 1994) (Archer, C.J., dissenting). Means of searching the whole storehouse of human knowledge for previous use of a given idea are also undeveloped. *See* Gottschalk v. Benson, 409 U.S. 63, 72, 175 U.S.P.Q. (BNA) 673, 677 (1972) (quoting a report of a presidential commission on reform of the patent laws to the effect that the Patent Office had no classification technique for computer programs, no search files, and no reliable or economically feasible way to search the tremendous volume of extant art).

The PTO would thus face a formidable task in trying to examine software abstractions for patentability under sections 102 and 103, 35 U.S.C. §§ 102, 103 (1994), let alone possible patentability problems under other sections. The PTO would need to develop a database, a search engine, and a methodology for legal analysis for determining whether a sufficient gap existed, *see* Dann v. Johnston, 425 U.S. 219, 230, 189 U.S.P.Q. (BNA) 257, 261 (1976), between the claimed subject matter and the prior art that the search engine extracted from the database.

On the other hand, the problems may not be insurmountable. Professor Bernard Galler of the University of Michigan's Electrical Engineering and Computer Science Department is engaged in a long-term project to develop a database and search engine for references to computer-program related inventions. *See* BERNARD A. GALLER, SOFTWARE AND INTELLECTUAL PROPERTY PROTECTION, chs. 3, 11 (1995). Moreover, textbooks exist on algorithms and they have organizational structures (such as a table of contents and an index) that may lend themselves to classification of algorithm prior art. While the problems persist, as Chief Judge Archer pointed out in his *Alappat* dissent, it may be that application of sufficient diligence will overcome them.

On the other hand, if the guidelines become at least de facto law, they may

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the views of the courts ought to prevail." United States *ex rel.* Steinmetz v. Allen, 194 U.S. 543, 560 (1904). In *Graham*, the Court said that it had "observed a notorious difference between the standards [of patentability] applied by the Patent Office and the courts." 383 U.S. at 18, 148 U.S.P.Q. (BNA) at 467. The Court then suggested that the Office should strictly adhere to the 1952 Act "as interpreted here," for that would "bring about a closer concurrence between administrative and judicial precedent." *Id.* at 19, 148 U.S.P.Q. (BNA) at 468. The clear meaning is that the PTO should defer to and follow the courts, especially the Supreme Court, and not vice versa. *But see* In re Trovato, 60 F.3d 807, 35 U.S.P.Q.2d 1570 (Fed. Cir. 1995) (en banc), *vacating* 42 F.3d 1376, 33 U.S.P.Q.2d 1194 (Fed. Cir. 1994) (panel decision affirming PTO refusal to grant patent on mathematical abstraction vacated and case remanded to PTO for reconsideration in light of draft guidelines).

The Software Guidelines are doubtless not intended to be issued under section 6, however, and are instead intended simply as stating the PTO's understanding of decisional precedents. That is, they are "interpretative" rules, *see* 5 U.S.C. § 553(b) (1994), which the original draft version of the guidelines preliminarily invoked. 60 Fed. Reg. 28,778. The implication was that the guidelines were not to be legally binding on applicants or anyone else; if they embodied an erroneous understanding of precedent, the courts would set the PTO straight; and, therefore, the guidelines lacked operative legal effect or significance. *See* Animal Legal Defense Fund v. Quigg, 932 F.2d 920, 18 U.S.P.Q.2d (BNA) 1677 (Fed. Cir. 1991). The recent final version of the Software Guidelines is even more explicit. The Introduction, 61 Fed. Reg. at 7,479, states that "[t]hese Guidelines do not constitute substantive rulemaking and hence do not have the force and effect of law."

For many practical reasons, however, including the vast expense of patent infringement litigation and the presumption of validity which must be overcome by clear and convincing evidence, 35 U.S.C. § 282 (1994); North Am. Vaccine, Inc. v. American Cyanamid Co., 7 F.3d 1571, 1579, 28 U.S.P.Q.2d (BNA) 1333, 1339 (Fed. Cir. 1993), the statement that such guidelines lack operative legal effect against third parties, such as accused infringers, is a legal fiction. The Software Guidelines represent a major effort to expand existing law to embrace software abstractions, and they are doubtless well meant. *See, e.g.*, PTO Press Release, *supra* note 15. Nonetheless, to the extent that administrative legislation, like judicial legislation, ultimately proves to be *ultra vires*, the exercise has little concrete result beyond imposing substantial expenses on applicants that rely futilely on the putative legislation and on accused infringers that are obliged to fund the litigation that undoes the *ultra vires* legislation.

previously addressed nor thought through. As long as copyright and patent law did not purport to protect ideas as such, it was unnecessary to address closely the problems that such protection may create and, by addressing them, devise ways to resolve the problems (or at least try to do so). It has been sufficient, then, simply to define the problems away by saying that the law does not protect ideas as such and therefore we need not determine how to do so in an acceptable way.

But if we are now to have such rights and legal protection, then we must begin to take seriously the task of solving these problems. That task is not impossible but it is difficult.[21] This article's proposals should be regarded, moreover, as an attempt to raise for discussion issues that ought to be recognized and that otherwise might simply be ignored. The proposals in this article, particularly the specific statutory language implementing

[21] *See* U.S. CONGRESS, OFFICE TECHNOLOGY ASSESSMENT, FINDING A BALANCE: COMPUTER SOFTWARE, INTELLECTUAL PROPERTY, AND THE CHALLENGE OF TECHNOLOGICAL CHANGE 130–46 (1992).

structure or pattern of the legal concept is thus twofold. First, intellectual property law provides a broad description of exclusive rights—meaning the legal right to stop certain imitative acts by others. These acts are defined as infringement. Second, the law carves a number of specific privileges, immunities, and exceptions out of the broad grant of rights, and relieves those who engage in the acts from infringement liability when, and to the extent that, the carve-outs apply.

Mitchell v. Hawley, 83 U.S. (16 Wall.) 544 (1872); Eastman Oil Well Survey Co. v. Sperry–Sun Surveying Co., 131 F.2d 885, 887 (5th Cir. 1943). In some circumstances, however, innocent intent may be a defense to, or lessen the extent of monetary liability for, copyright and patent infringement. *See* 17 U.S.C. §§ 504(c)(2), 907 (1994); 35 U.S.C. §§ 284, 285, 287(b)(5)(A) (1994).

[24] In intellectual property law, the right to (or power to get a court order that will) exclude unauthorized persons from engaging in given acts is termed the "exclusive right" to do the given acts. *See* 17 U.S.C. §§ 106, 905 (1994). Formerly, the patent statute was similarly worded, *see* United States v. Univis Lens Co., 316 U.S. 241, 250 (1942); Bauer & Cie. v. O'Donnell, 229 U.S. 1, 9–10 (1913), but in the 1952 codification, the statute was changed to provide "the right to exclude others from" doing given acts. *See* 35 U.S.C. § 154 (1994). According to the Reviser's Note, the purpose of the change in terminology from exclusive right to exclusionary right was "to render the meaning clearer."

The intellectual property laws do not themselves give an owner of intellectual property rights the right to do any acts, for several reasons. If another person has a different patent or a copyright covering some aspect of the act, the owner does not have a right to do the act without the permission of the other person. Temco Elec. Motor Co. v. Apco Mfg. Co., 275 U.S. 319, 328 (1928); Little Mule Corp. v. Lug All Co., 254 F.2d 268, 272–73, 117 U.S.P.Q. (BNA) 111, 113–14 (5th Cir.), *cert. denied*, 358 U.S. 838, 119 U.S.P.Q. (BNA) 502 (1958). If a positive law forbids the act, owning a patent will not help its owner overcome the positive law. Patterson v. Kentucky, 97 U.S. 501, 506–07 (1879) (state law); Decker v. FTC, 176 F.2d 461, 463, 81 U.S.P.Q. (BNA) 519, 521–22 (D.C. Cir.), *cert. denied*, 358 U.S. 838 (1958) (§ 5, FTC Act). Finally, to the extent that anyone has any so–called right to do any act, it is because the common law, not the intellectual property law, gives everyone a right (really, a privilege or immunity) to do whatever is not prohibited by law, as well as the "right" to engage in the ordinary incidents of the ownership of one's property. *See* Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 149, 9 U.S.P.Q.2d (BNA) 1847, 1851 (1989); *Patterson*, 97 U.S. at 506–07 (holding that the right to sell one's patented article comes from property law, not patent law).

In addition, a patentee may be precluded from enforcing a patent that the patentee has misused.[34]

Copyright law gives a copyright owner a right to relief[35] against a person who has reproduced copies of, prepared derivative works based on, or distributed copies of a work protected by copyright.[36] These rights are subject to a number of statutory and common law exceptions, immunities, and privileges to which a defendant may be entitled. They include laches,[37]

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[34] *See* Dawson Chem. Co. v. Rohm & Haas Co., 448 U.S. 176, 206 U.S.P.Q. (BNA) 385 (1980). *But see* 35 U.S.C. § 271(d) (1994) (limiting scope of misuse doctrine).

[35] 17 U.S.C. § 503 (1994) (addressing monetary relief). A copyright owner also has a right to injunctions in appropriate circumstances. *Id.* § 502.

[36] Copyright law does not confer a general right to control use of copyrighted works, as patent law does. Bauer & Cie. v. O'Donnell, 229 U.S. 1, 14, 15 (1913). However, copyright law does provide rights to control use by public performance and use by display, for most works. 17 U.S.C. §§ 106(d), (e) (1994). There is no right to prevent other kinds of use, however, unless they incidentally involve acts of reproduction of copies. Thus, in MAI Sys. Corp. v. Peak Computer, Inc., 991 F.2d 511, 26 U.S.P.Q.2d (BNA) 1458 (9th Cir. 1993), *cert. dismissed*, 114 S. Ct. 671 (1994), the Ninth Circuit held that turning on a computer was copyright infringement of the copyright in software such as the ROM BIOS of the computer, because this action caused the computer to load the ROM BIOS into RAM at least temporarily. In effect, therefore, the court gave the copyright owner a right to control any execution of the program, because such use required a so-called copy to be reproduced. Unless estoppel, implied license, or some other exception or privilege such as fair use applies as a counter-force, the doctrine of the *MAI* case would create the equivalent of a general use right for copyrighted computer programs (but not for other kinds of copyrighted work). In Triad Sys. Corp. v. Southeastern Express Co., 64 F.3d 1330, 36 U.S.P.Q.2d (BNA) 1028 (9th Cir. 1995), *cert. denied*, 116 S. Ct. 1015 (1996), the Ninth Circuit held that fair use was not a defense to a claim of copyright infringement based on an *MAI* theory, in a case with facts very similar to those of *MAI*. However, the injunction in the *Triad* case contained a specific qualification providing that "the act of switching on power to or otherwise turning on a Triad computer," without other allegedly infringing conduct, was not prohibited. 50 Pat. Trademark & Copyright J. (BNA) 557, 559 (Sept. 14, 1995).

[37] Roulo v. Russ Berrie & Co., 886 F.2d 931, 942, 12 U.S.P.Q.2d (BNA) 1423, 1431–32 (7th Cir. 1989).

plaintiff's violation of the antitrust laws, laches, estoppel, and acquiescence.[48] The Plant Variety Protection Act, a petty patent statute regulating sexually reproduced plants, defines infringement in terms generally similar to the patent and copyright laws,[49] and then describes exemptions[50] and other defenses.[51]

B. *Acts Of Infringement*

1. Nature Of Acts

Many of these statutory rights against infringement are not self-defining. The patent statute does not define "make," "use," or "sell,"[52] the principal acts of patent infringement.[53] The copyright statute does not define "reproduce,"[54] the principal act of copyright infringement.[55] Hence, while it

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[48] *Id.* § 33(b), 15 U.S.C. § 1115(b); *see also* Champion Spark Plug Co. v. Sanders, 331 U.S. 125, 73 U.S.P.Q. (BNA) 133 (1947) (holding that nondeceptively designating reconditioned goods by referring to original brand name is fair use of trademark).

[49] Plant Variety Protection Act § 111, 7 U.S.C. § 2541 (1994). Asexually reproduced plants may be patented under 35 U.S.C. § 161 (1994), which may also be considered a petty patent law.

[50] *Id.* §§ 112–115, 7 U.S.C. §§ 2542–45.

[51] *Id.* § 122(b), 7 U.S.C. § 2562(b).

[52] *See* 35 U.S.C. § 100 (1994) (definitions); Roche Prods., Inc. v. Bolar Pharmaceutical Co., 733 F.2d 858, 861, 221 U.S.P.Q. (BNA) 937, 939 (Fed. Cir.), *cert. denied*, 469 U.S. 856 (1984) ("Because Congress has never defined use, its meaning has become a matter of judicial interpretation.").

[53] *See* 35 U.S.C. § 271(a) (1994).

[54] *See* 17 U.S.C. § 101 (1994) (definitions).

[55] *See id.* § 106(1). The other major act of copyright infringement is distribution. *See id.* § 106(3) (defining distribution contextually, by describing the copyright owner's exclusionary right as one "to distribute . . . by sale or other transfer of ownership, or by rental, lease, or lending" to the public a copy of the copyrighted work). Although "distribution" is defined with reference to the "public," the latter word is not defined in the copyright statute, which has led to some counterintuitive decisions. *See*

2. Knowledge, State Of Mind

Neither the copyright nor patent statute prescribes any scienter requirement or standard for direct infringement, and the two bodies of law have taken somewhat divergent paths. Neither law makes ignorance of the existence of rights a defense, of itself.[60] A printer can be liable for unknowingly printing a copyrighted work,[61] and a manufacturer can be liable for innocently manufacturing a patented product.[62] Copyright law requires copying,[63] however, while patent law does not. Therefore, independent creation of a work is a complete defense to a claim of copyright infringement,[64] but no defense at all to a claim of patent infringement.[65] It is

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[60] Innocence of infringement may, however, lessen or avoid liability in some circumstances. *See* 17 U.S.C. § 504(c)(2) (1994) (defining liability for statutory copyright damages), *id.* § 907 (defining SCPA liability); 35 U.S.C. § 287(a) (1994) (defining monetary liability for patent infringement).

[61] Belford v. Scribner, 144 U.S. 488, 507–08 (1892); Pickwick Music Corp. v. Record Prods., Inc., 292 F. Supp. 39, 41, 159 U.S.P.Q. (BNA) 228, 229 (S.D.N.Y. 1968) (holding record manufacturer without knowledge of copyright infringement nonetheless absolutely liable).

[62] *See* United States v. Berdan Firearms Mfg. Co., 156 U.S. 552, 566 (1895); Granite Music Corp. v. United Artists Corp., 532 F.2d 718, 189 U.S.P.Q. (BNA) 406, 408 (9th Cir. 1976) ("one may infringe a patent by innocent and independent reproduction").

[63] Copying may be inferred from striking similarity of the two works, *see* Selle v. Gibb, 741 F.2d 896, 901, 223 U.S.P.Q. (BNA) 195, 198–99 (7th Cir. 1984) (holding that similarity so striking as to preclude coincidence, independent creation, and earlier common source justified inference of copying), but copying must at least be inferred, *id.* at 901–02 (holding that copyrighted work must at least have been available to alleged infringer so that it could be copied, and holding that without access there cannot be copying).

[64] Sheldon v. Metro-Goldwyn Pictures Corp., 81 F.2d 49, 54 (2d Cir.), *cert. denied*, 298 U.S. 835 (1936); *see* Alfred Bell & Co. v. Catalda Fine Arts, 191 F.2d 99, 103, 90 U.S.P.Q. (BNA) 153, 157 (2d Cir. 1951) (commenting on difference between patent and copyright law regarding independent creation as defense).

[65] *Berdan Firearms*, 156 U.S. at 566 (1895); Schnadig Corp. v. Gaines Mfg. Co., 620 F.2d 1166, 1173 n.3, 206 U.S.P.Q. (BNA) 202, 206 n.3 (6th Cir. 1980) (holding independent creation not a defense in patent infringement case).

inducement of domestic infringement occur abroad[69]—the culpable seller or inducer is liable for infringement in the United States. This may be rationalized on the theory that the acts of infringement (deemed here to include the direct impact of the acts) occur in substantial part in the United States.

C. *Protected Subject Matter And Closeness Of Similarity*

It is not always clear what is the "protected subject matter" of a copyright or patent. Copyright law does not have any system for defining its protected subject matter with particularity. According to the case law,[70] codified in section 102(b) of the statute,[71] copyright protects the expressive aspect of a work but not its idea content. But how does one distinguish between idea and expression? Judge Learned Hand, credited with origination of the pattern of abstractions test[72] for distinguishing idea from

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[69] Honeywell, Inc. v. Metz Apparatewerke, 509 F.2d 1137, 184 U.S.P.Q. (BNA) 387 (7th Cir. 1975); Akzona, Inc. v. E.I. du Pont de Nemours Co., 662 F. Supp. 603, 4 U.S.P.Q.2d (BNA) 1114 (D. Del. 1987); *see also* 35 U.S.C. § 271(f) (1994) (creating infringement liability for inducing conduct outside the United States that would infringe United States patent if conduct occurred in United States).

[70] *See, e.g.*, Baker v. Selden, 101 U.S. 99 (1879).

[71] 17 U.S.C. § 102(b) (1994) ("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.").

[72] This test was adopted for computer programs in Computer Assocs. Int'l v. Altai, Inc., 982 F.2d 693, 706, 23 U.S.P.Q.2d (BNA) 1241, 1252 (2d Cir. 1992), and has since been adopted by a number of other courts. *See, e.g.*, Apple Computer, Inc. v. Microsoft Corp., 35 F.3d 1435, 1443, 1445, 32 U.S.P.Q.2d (BNA) 1086, 1092, 1094 (9th Cir. 1994), *cert. denied*, 115 S. Ct. 1176 (1995); Engineering Dynamics, Inc. v. Structural Software, Inc., 26 F.3d 1335, 1342–45, 31 U.S.P.Q.2d (BNA) 1641, 1645–48 (5th Cir. 1994); Gates Rubber Co. v. Bando Chem. Indus., Ltd., 9 F.2d 823, 834, 28 U.S.P.Q.2d (BNA) 1503, 1508 (10th Cir. 1993).

Patent law has a more elaborate and structured system for determining actionable similarity, and it is less subjective.[76] Patent applicants must define the subject matter on which they seek legal protection with particularity. They must do so by drafting claims that describe the metes and bounds of the protected subject matter on which a patent is to be granted.[77] This requirement has generated "the highly developed art of drafting patent claims."[78] Yet, words are inherently imprecise; at times they slip and slide, forcing judicial recourse to the equitable doctrine of equivalents to save patentees from their inability to out-imagine foxy would-be pirates of patent rights.[79] But what is equivalent in one context turns out to be inequivalent in another, while inequivalents can morph into equivalents in appropriate circumstances.[80] Indeed, the Federal Circuit is now so hopelessly at odds over the doctrine of equivalents that one member of the court has observed that interpretation of the doctrine

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[76] Actionable similarity under patent law has no relation to substantial or confusing similarity under copyright or trademark law, at least for ordinary, utilitarian patents. The test for design patents comes closer to copyright law's test. *See* Gorham Mfg. Co. v. White, 81 U.S. (14 Wall.) 511 (1872); Braun, Inc. v. Dynamics Corp., 975 F.2d 815, 24 U.S.P.Q.2d (BNA) 1121 (Fed. Cir. 1992). For a general review of the infringement standard in design patent law, see Harry C. Marcus and Mark J. Abate, *Design Patent Infringement Put To Sea Without Guiding Charts*, 22 AIPLA Q.J. 135 (1994).

[77] Aro Mfg. Co. v. Convertible Top Replacement Co. (*Aro I*), 365 U.S. 336, 128 U.S.P.Q. (BNA) 154 (1961) (stating that it is well settled that patent claims are measures of patent grants); *see* 35 U.S.C. § 112 ¶2 (1994) (requiring that every patent must "conclude with one or more claims particularly and distinctly pointing out and distinctly claiming the subject matter which the applicant regards as his invention").

[78] Brenner v. Manson, 383 U.S. 519, 534, 148 U.S.P.Q. (BNA) 689, 695 (1966).

[79] *See* International Visual Corp. v. Crown Metal Mfg. Co., 991 F.2d 768, 773–75, 26 U.S.P.Q.2d (BNA) 1588, 1592–94 (Fed. Cir. 1993) (Lourie, J., concurring).

[80] Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 85 U.S.P.Q. (BNA) 328 (1950).

such indirect infringement by expressly prohibiting active inducement of infringement[83] and contributory infringement.[84] Active inducement of infringement is what the phrase implies: urging another person to infringe a patent, for example, by selling a product that can be used in an infringing manner and at the same time labelling the product with instructions on how to carry out the infringing use (as contrasted with merely passively filling an order).[85] Contributory patent infringement is the sale of a product useful substantially only for infringing purposes, when the seller knows of the patent and knows that the customer's use will infringe the patent.[86] Although the copyright statute does not contain an express provision on

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that the vicariously liable person both could have controlled the actual infringer to prevent the infringement and gained economic benefits from failing to exercise such control. *See, e.g.*, Shapiro, Bernstein & Co. v. H.L. Green Co., 316 F.2d 304, 307, 137 U.S.P.Q. (BNA) 275, 277 (2d Cir. 1963) (holding department store liable for copyright infringement by phonograph record concessionaire, where rental fee was proportional to sales volume); *see also Sony*, 464 U.S. at 437 n.18, 220 U.S.P.Q. (BNA) at 676 n.18 (collecting and apparently brushing aside such cases); Religious Technology Ctr. v. Netcom On-Line Communications Servs., Inc., 907 F. Supp. 1361 (N.D. Cal. 1995) (holding access provider not vicariously liable for user's infringing postings on Usenet).

This article uses the term "vicarious liability" in the sense in which the Supreme Court used it in *Sony*, rather than in the sense in which the line of cases discussed in the preceding paragraph used it. As used here, the term is equivalent to "indirect infringement" (as contrasted with direct infringement).

[83] 35 U.S.C. § 271(b) (1994).

[84] *Id.* § 271(c).

[85] *See* Honeywell, Inc. v. Metz Apparatewerke, 509 F.2d 1137, 1141, 184 U.S.P.Q. (BNA) 387, 390 (7th Cir. 1975); Fromberg, Inc. v. Thornhill, 315 F.2d 407, 411, 137 U.S.P.Q. (BNA) 84, 87 (5th Cir. 1963); Burlington Indus., Inc. v. Exxon Corp., 379 F. Supp. 754, 757, 183 U.S.P.Q. (BNA) 729, 730–31 (D. Md. 1974).

[86] *Aro II*, 377 U.S. 476, 141 U.S.P.Q. (BNA) 681 (1964).

and even though the goods are capable of noninfringing use.[91] In the same circumstances, however, a supplier would not be liable for patent infringement[92] or copyright infringement.[93] At the other end of the spectrum, intentionally inducing a customer to infringe is always grounds for vicarious liability.[94] A very difficult question, at issue in the case that split the Court 4-4-1, is whether, to be liable for contributory patent infringement, a supplier once it knows the particular use to which customers will put a product must also know that customers will commit patent infringement when they do so.[95] One 5-4 majority held that the supplier would be liable only if it knew that such patent infringement would occur. The majority considered this result compelled by the legislative history, which involved Congress' rewriting the original version of the contributory infringement provision of the patent law. Congress did that to avoid making suppliers liable for innocent infringement, as part of a compromise in which contributory

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[91] *Inwood Labs.*, 456 U.S. at 855, 214 U.S.P.Q. (BNA) at 6 ("continued to supply [product] to pharmacists whom the petitioners knew were mislabelling . . . drugs"); *see Sony*, 464 U.S. at 439 n.19, 220 U.S.P.Q. (BNA) at 677 n.19.

[92] 35 U.S.C. § 271(c) (1994) (expressly stating that the supplier is not liable if the goods are capable of a substantial noninfringing use); *see* Dawson Chem. Co. v. Rohm & Haas Co., 448 U.S. 176, 206 U.S.P.Q. (BNA) 385 (1980) (holding seller liable because goods had no substantial use other than for infringing patented process).

[93] *Sony*, 464 U.S. at 439, 220 U.S.P.Q. (BNA) at 677 (holding that there is no precedent in the law of copyright for the imposition of vicarious liability on defendant on the theory that it sold equipment to customers who would sometimes use the equipment in a noninfringing manner and perhaps other times use it in an infringing manner).

[94] *See* 35 U.S.C. § 271(b) (1994) (describing active inducement of patent infringement); *Sony*, 464 U.S. at 439 n.19, 220 U.S.P.Q. (BNA) at 677 n.19 (accepting by implication "intentionally induced" standard for copyright infringement); *Inwood Labs.*, 456 U.S. at 855, 224 U.S.P.Q. (BNA) at 6 (discussing "intentionally induced" trademark infringement).

[95] *Aro II*, 377 U.S. at 488, 514, 524–27, 141 U.S.P.Q. (BNA) at 686–87, 700–01, 703. In *Aro II*, a supplier made fabric tops specially adapted for replacement of worn tops of particular car models. The supplier therefore knew what cars its component would go into. It was disputed whether the supplier knew or should have known that putting the fabric tops into those cars would result in patent infringement.

from permissible, protected competition.[99] Moreover, the importance of some of these factors, or their relevant threshold, may vary in regard to different acts of infringement.

III. ACTS OF INFRINGEMENT OF SOFTWARE RIGHTS

A. *Abstract And Tangible Forms Of Protected Subject Matter*

Before defining the concept of infringement of rights in software abstractions, such as algorithms, one might attempt to extrapolate from copyright infringement and patent infringement. That exercise illustrates some of the difficulties in defining an appropriate infringement space for software abstractions.

Under copyright law, reproduction and distribution of copies of a copyrighted work are the central exclusive rights and thus the central acts of copyright infringement.[100] A "copy" of a work is a material object in which the work is fixed.[101] The concepts of copyright in an advance in human thought, and its potential infringement, are thus structured in successive levels of abstraction, reminding us of Plato's archetypes and his shadows on

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[99] It is a policy of federal intellectual property law that—except when trade secret law, laws against deceptive practices, or some other body of positive law that is not competitive with federal intellectual property law supervenes—outside the boundary a federal right exists to copy, use, and freely compete in the sale of goods and services. Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 164–65, 9 U.S.P.Q.2d (BNA) 1847, 1856–58 (1989). This federal right to compete is apparently inferred from the total scheme of the federal intellectual property statutes, rather than from any provision of the Constitution. *Id.* at 165, 9 U.S.P.Q.2d (BNA) at 1857–58. *But see* Compco Corp. v. Day-Brite Lighting, Inc., 376 U.S. 234, 237, 140 U.S.P.Q. (BNA) 528, 530 (1964) ("To forbid copying would interfere with the federal policy, found in Art. I, § 8, cl. 8, of the Constitution and in the implementing federal statutes, of allowing free access to copy whatever the federal patent and copyright laws leave in the public domain."). It has been suggested that the right is inspired by the common law of England and the Statute of Monopolies. *Bonito*, 489 U.S. at 149, 9 U.S.P.Q.2d (BNA) at 1851; *see* Sears, Roebuck & Co. v. Stiffel Co., 376 U.S. 225, 229 n.6, 140 U.S.P.Q. (BNA) 524, 527 n.6 (1964).

[100] 17 U.S.C. § 106 (1994).

[101] *Id.* § 101.

different words to express the same ideas or to remove some things and add others located at various levels of abstraction along the idea–expression continuum.

Ordinarily, one initially fixes a work in a paper or computer–stored copy by writing down or keying in a draft expression of the idea(s) of the work, simultaneously with or shortly after thinking the expression out (to keep it from being forgotten). Subsequently, one fixes additional draft expressions or iterations in copies until the work assumes a sufficiently final form to satisfy or weary its author. It is said that a computer program work never reaches its final form until its last bug is removed; that usually occurs at approximately the time the computer program is taken out of use because it is obsolete. Accordingly, a more proper statement of the copyright hierarchy is: work—version of work—copy of version of work.

Computer programs typically have versions designated by successive integers and releases of versions that are designated decimally. Thus, DOS 6 (or 6.0) followed DOS 5 and its releases; within DOS 6 were bugfix and other versions or releases designated with such numbers as 6.2 or 6.22. Similarly, Windows 3 followed Windows 2, and was followed in turn by Windows 3.1 and then Windows 3.11. A modified version of a work can be the subject of a separate claim of copyright, registered in the Copyright Office, although the second copyright applies only to the changes not found in the earlier–registered version. The Copyright Office's form for registration of a computer program (Form TX) has a space on the back in which the applicant is directed to indicate what parts of the material being registered are different from any earlier–registered version. Failure to comply with this requirement has figured in computer program copyright infringement litigation. *See, e.g.*, Ashton–Tate Corp. v. Fox Software, Inc., 760 F. Supp. 831 (C.D. Cal. 1990) (holding initially that failure to disclose that dBase II programming language was derived in substantial part from earlier public–domain computer program was fraud that invalidated copyright; ruling later withdrawn).

It is unclear to what extent copyright law will treat successive versions of computer programs as separate works. Software proprietors are often uncertain whether to register each decimally designated release or just ones with new integers. This issue has bred litigation, for it is uncertain whether a pirate who copies the latest release can be sued for infringement of the earlier release that the copyright proprietor registered. *See* Central Point Software, Inc. v. Nugent, 903 F. Supp. 1057 (E.D. Tex. 1995). In that case, plaintiff Central Point registered PC Tools 7.0 but not 8.0, which the defendant copied; similarly, plaintiff Quarterdeck registered DESQview 2.34 but not 2.43, and registered QEMM 6.0 but not 6.2, and the defendant copied the later programs. The court found copyright infringement under a "derivative work" theory, *see* 17 U.S.C. § 106(2)

The central infringement provision of patent law states that "whoever without authority makes, uses, offers to sell, or sells any patented invention . . . infringes the patent."[109] The statutory language is ill-chosen or archaic,[110] and requires exegesis. One makes an invention, in the ordinary modern English language sense of "make," by conceiving the invention and then working out its details sufficiently that one is able to practice the invention. By the same token, in the ordinary English language sense of "sell," you sell an invention by getting someone else, such as an investor, to provide money to become its owner or share in its ownership. But none of

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followed the House's *sui generis* approach. CHIP PROTECTION, *supra* note 44, § 1.4[B]–[C]. Nevertheless, the concept of mask *work*, adopted to make the SCPA compatible with the copyright laws, remained in the SCPA as enacted.

The problem of devising chip layout protection did not compel this oblique approach. It would have been possible simply to provide that a chip registrant was entitled to certain remedies against persons who manufacture, distribute, or import the registered chip. *See* Richard H. Stern, *Conflicts of Laws Problems Under the New U.S. Semiconductor Chip Protection Act*, 17 INT'L REV. INDUS. PROP. & COPYRIGHT L. 486, 488–89 (1986) (giving example of such alternative language).

[109] 35 U.S.C. § 271(a) (1994). The "offers to sell" phrase is a recent addition. Another recent change also made importation of a patented invention into the United States an act of infringement. Additionally, *id.* § 271(f) prohibits supply of substantial components of a patented combination for assembly abroad, and *id.* § 271(g) prohibits importation, offers to sell, sale, and use of products made by a patented process.

The parallel provisions of *id.* § 154(a)(1), describing a patent grant, refer to "the right to exclude others from making, using, offering for sale, or selling the invention." This provision also covers importing the invention and, if the invention is a process, using, offering for sale, or selling products made by the patented process.

[110] The first Patent Act of 1790 provided that "if any person or persons shall devise, make, construct, use, employ, or vend . . . any invention or improvement . . . the sole and exclusive right of which shall be granted by patent . . . every person so offending shall forfeit and pay [damages] to the said patentee . . . recovered in an action on the case." 1 Stat. 109 (1790).

The structure of the concept of patent rights and their infringement is less deliberately layered than that of copyright law, with its topmost level of "work," subdivided into categories such as literary work, musical work, audiovisual work, and architectural work,[115] below which are the generic kinds of "copies," such as books, tapes, films, paintings, etchings, and statues. At the top of patent law are inventions, which come in four categories of utilitarian nature: process, machine, article of manufacture, and composition of matter.[116] One infringes patent rights in an invention by using a patented process or by making, using, or selling a patented machine, article of manufacture, or composition of matter.[117] The dualism of invention and embodiment of the invention is not stressed in patent law as it is in copyright law for works and their fixed embodiments in copies.

Although patent law does not stress invention/embodiment dualism as copyright law so consciously does, the issue nonetheless lurks beneath the surface. Thus, copyright allows authors to sell works and to sell copies of works, and it is clear that those are two quite different things.[118] But when patent law speaks of selling an invention or placing an invention on sale, it may not be clear whether the entity being sold corresponds to the "work" in copyright law (i.e., the intellectual property rights in the work or invention) or to the "copy" of copyright law (i.e., the tangible physical embodiment of the work).[119] The issue does not disappear simply because it goes unmentioned.

In a nutshell, therefore, intellectual property dualism operates in much the same way under copyright and patent law for advances and their embodiments. An infringer commits infringement by interfering with legal rights in a work, invention, or other subject matter that intellectual property law protects; the infringer does so by doing something proscribed, with or

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[115] 17 U.S.C. § 102(a) (1994).

[116] 35 U.S.C. § 101 (1994) (listing patentable inventions).

[117] See *supra* notes 112–13 and accompanying text. In addition, importation, use, and sale of products made by patented processes may be infringement. See text accompanying *supra* note 114.

[118] 17 U.S.C. § 202 (1994) (sale of copy is not sale of copyright in work).

[119] See *supra* note 111 and accompanying text.

assimilate them to the copyright and patent paradigms? Third, what instruction does one get from doing so?

1. What Do You Do With An Algorithm?

One utilizes an algorithm for commercial and industrial purposes by implementing it in computer code, embodying it in a medium, and executing the embodied code. More specifically, one writes a computer program that implements or embodies the algorithm.[120] Next, one physically embodies the computer program by encoding it into machine-readable form in a floppy disk, memory chip, or other storage medium. Finally, one executes the stored program in a computer or similar machine to accomplish a desired result or perform a desired function, or markets the program to persons who will do so.[121] The same is true of other software abstractions such as programming languages and data structures. An appropriate definition of infringement should encompass such uses. It is unclear whether there are any other significant ways to use a software abstraction.

Additionally, one may sell or license rights to such a computer program, license its use, and sell the encoded disk or chip, by itself or as a component of another product. Further, one may not only execute the computer program directly on site, but may also transmit it over a network. Those acts of trafficking, as well, may be included in a definition of infringement. There may be other commercially significant ways to exploit,

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[120] *See* ROBERT SEDGEWICK, ALGORITHMS 4 (1983) ("The term *algorithm* is universally used in computer science to describe problem-solving methods suitable for implementation as computer programs."); NICKLAUS WIRTH, ALGORITHMS + DATA STRUCTURES = PROGRAMS xii (1976) ("*Programs*, after all, are concrete formulations of abstract *algorithms* based on particular representations and structures of *data*.").

[121] Thus, in Dann v. Johnston, 425 U.S. 219, 189 U.S.P.Q. (BNA) 257 (1976), *reversing* 502 F.2d 765, 183 U.S.P.Q. (BNA) 172 (C.C.P.A. 1974), the proprietor of a system by which banks could furnish their customers with monthly subtotals of checks in various categories (e.g., food expense, fuel expense, rent) prepared a computer program for use in a general-purpose digital computer, *see* 425 U.S. at 220–22, 189 U.S.P.Q. (BNA) at 258-59, and marketed the "computer program to banks and to other data processing companies so that they can perform these data processing services for depositors," *see* 502 F.2d at 773, 183 U.S.P.Q. (BNA) at 177.

restates the truism that software abstractions are abstract ideas rather than concrete expressions of ideas.[123]

3. Is That What You Do Under Patent Law?

The same questions may be asked for the categories of patent infringement. Does one make, use, or sell a software abstraction? One cannot make or sell an algorithm, or other abstraction, of itself.[124] Nor can one use an algorithm except by embodying it into a computer program, which one then uses in connection with the operation of a computer or similar machine, typically to perform a physical process or at least manipulate data.[125] Thus, one does not use an algorithm the way one uses a machine.[126] Use of a process is more analogous, and the PTO has expended considerable energy in finding ways to deem algorithm-directed inventions to be processes.[127] But grasping for analogies is of limited value. An algorithm, as such, is not a patentable process under present United States law, because an algorithm

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[123] It is generally recognized, for example, that an algorithm is excluded from the scope of copyright by 17 U.S.C. § 102(b) (1994). *See* 3 NIMMER ON COPYRIGHT § 13.03[F] n.289 ("Courts recognize algorithms as the very essence of abstract ideas; as such, algorithms are ineligible for copyright or patent protection."). *But see* Gates Rubber Co. v. Bando Chem. Indus., Ltd., 9 F.3d 823, 834–40, 849, 28 U.S.P.Q.2d (BNA) 1503, 1509–14, 1522 (10th Cir. 1993) (remanding for determination whether algorithm content of computer program is idea or expression, stating that possibility exists that algorithm is expression rather than idea or process under § 102(b) and that issue of merger should also be considered if algorithm survived idea/expression filtration). Nimmer appears to have the better view.

[124] In this regard, an algorithm is comparable to a patented process, which cannot be made or sold, as such. See *supra* note 113.

[125] *See In re* Schrader, 22 F.3d 290, 30 U.S.P.Q.2d (BNA) 1455 (Fed. Cir. 1994).

[126] Ones uses an algorithm in the sense that one "uses" the Pythagorean Theorem to determine a hypotenuse of a triangle. That is to say, one uses an idea in a way that is different from the way in which one uses a machine or article of manufacture.

[127] *See, e.g., Ex parte* Alappat, 23 U.S.P.Q.2d (BNA) 1340, 1341–44 (Bd. Pat. App. & Int. 1992), *rev'd*, 33 F.3d 1526, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994); Patentable subject matter—mathematical algorithms and computer programs, 1106 Official Gazette Pat. Off. 5, 7 (Sept. 5, 1989) (§ II.C.1.b).

5. Statutory Language

These conclusions about infringement of proposed rights in software abstractions are implemented in the following sections of a draft statute addressing such infringement:[130]

> **§ 1001. Direct infringement**
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> Subject to [later sections describing exemptions and limitations], a person infringes rights in a software abstraction protected under this Act if the person uses, or traffics in an embodiment of, the protected software abstraction within the United States, and the person knows or should know that the software abstraction is protected under this Act.
>
> **§ 1002. Indirect infringement**
>
> [addressed in a subsequent section of this article][131]
>
> **§ 1003. Use of protected subject matter in programming**
>
> A person uses a protected software abstraction within the meaning of section 1001 if the person prepares a computer program that implements or embodies the protected software abstraction.

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[130] For convenience only, this article will begin numeration of proposed legislative sections concerning infringement of computer software rights with 1001. That is purely arbitrary. An actual computer software rights statute would not begin with the section 1001 that follows. More likely, the statute would begin with a statement of policies and purposes, or possible legislative findings, and then proceed to a description of the subject matter of protection and the conditions or requirements for entitlement to legal protection, and only then address infringement. The patent, copyright, and chip layout protection laws follow such patterns. Generally, an intellectual property statute describes infringement only after addressing a number of more preliminary issues. See *supra* note 22.

[131] *Infra* text accompanying notes 157-58.

requirement,[134] and sound arguments can be made both for and against requiring such knowledge in a law protecting software abstractions.

The issue is not academic. In some common situations, a person potentially liable as a software infringer does not have any reasonable way to guard against infringement. For example, a person acting as an intermediate in the distribution of computer programs has no practical way of determining what algorithms or other abstractions the computer programs embody. Consider, for example, infringement involving a program such as Microsoft's MS-DOS 6, which was distributed to end users, among other ways, by software retailers such as Egghead and by original equipment manufacturer ("OEM") computer sellers that sold computers or computer components preloaded with MS-DOS. The software retailers purchased MS-DOS floppy disks from Microsoft for resale to end users. The computer OEMs, under license from Microsoft, either themselves preloaded MS-DOS onto the hard disks of the computers or, before assembling the computers, purchased hard disks already so preloaded from hard disk OEMs that Microsoft had licensed. The computer OEMs then sold the completed MS-DOS-containing computer systems to end users. Additionally, some computer programs are distributed to end users via on-line downloading, such as when a CompuServe subscriber downloads software. In principle, this could have occurred here, and future software-related infringement cases will doubtless feature such infringing

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any culpable state of mind. The reason why the scienter provisions of section 1001 govern is that use and trafficking are not necessarily infringing. Infringement is defined by section 1001, which makes use and trafficking infringement only when they are accompanied by a culpable state of mind.

[134] See *supra* notes 55–58 and accompanying text. Copyright law, patent law, and proposed section 1001 do *not* require a party to desire or intend to infringe as a condition of liability. Knowing that one's conduct is infringing does not necessarily mean that one wants to infringe and it certainly does not mean that one acts with a malicious desire to harm the owner of the infringed intellectual property rights. Thus, the fact that an actor recognizes the probable or even necessary consequences of his or her acts does not imply the further fact that the actor delights in the occurrence of those consequences. It means only that the actor *accepts* the fact that the consequences will occur. That acceptance, however, ordinarily suffices for liability to attach in the case of most business torts. (An exception may arise when the actor's conduct harming another has sufficiently redeeming social value to make it privileged.)

equipment unless the software vendors paid Sega a hefty fee. *Id.* at 1527–28, 24 U.S.P.Q.2d (BNA) at 1574; *accord,* Bateman v. Mnemonics, Inc., 79 F.3d 1532, 38 U.S.P.Q.2d (BNA) 1225 (11th Cir. 1996).

It is difficult to distinguish the bulletin board's and Netcom's storage of Scientology texts in nonvolatile memory from the intermediate copying in the *Sega* case; both appear equally to be reproduction in copies for purposes of § 106(1). (That suggests the need for a statutory fix if net access providers are not to be held as direct infringers when they store copyrighted material in their systems' nonvolatile memories.) *See also* MAI Systems Corp. v. Peak Computer, Inc., 991 F.2d 511, 26 U.S.P.Q.2d (BNA) 1458 (9th Cir. 1993), *cert. dismissed,* 114 S. Ct. 671 (1994) (holding that storage even in volatile memory (RAM) is reproduction in copies under § 106(1)).

Three other net–download cases involved what appeared to be conspiracies between bulletin board operators and their subscribers to commit piracy of copyrighted works. *See* Playboy Enters., Inc. v. Frena, 839 F. Supp. 1552, 29 U.S.P.Q.2d (BNA) 1827 (M.D. Fla 1993); Sega Enters., Ltd. v. MAPHIA, 857 F. Supp. 679, 30 U.S.P.Q.2d (BNA) 1921 (N.D. Cal. 1994); Central Point Software, Inc. v. Nugent, 903 F. Supp. 1057, 37 U.S.P.Q.2d (BNA) 1051 (E.D. Tex. 1995).

In *Playboy,* a bulletin board operator allowed a subscriber to upload digitized files of "Playmate" pictures from *Playboy* magazine, so that other subscribers could download them. The court held that the bulletin board engaged in unauthorized public distribution of the works, in violation of 17 U.S.C. § 106(3). 839 F. Supp. at 1559, 29 U.S.P.Q.2d (BNA) at 1831. In *MAPHIA,* a bulletin board operator actively solicited its subscribers to upload pirated video game software to the bulletin board so that other subscribers to the bulletin board could download it; the court held that to be copyright infringement. 857 F. Supp. at 688, 30 U.S.P.Q.2d (BNA) at 1926. The *Netcom* court pointed out that neither of these earlier decisions could be considered precedents governing the relatively passive, or at least non–conspiratorial and perhaps innocent, conduct of Netcom and the bulletin board in regard to the Scientology texts. 907 F. Supp. at 1379.

Nugent involved a bulletin board (Agents of Fortune) that encouraged its subscribers to download such copyrighted software as Central Point's "PC Tools" and Quarterdeck's "QEMM" and "DESQview." 903 F. Supp. at 1059, 37 U.S.P.Q.2d (BNA) at 1052. These programs had been posted on (uploaded to) the bulletin board, thereby writing them to the bulletin board's hard disk, in violation of 17 U.S.C. § 106(1). *Id.* at 1058–59, 37 U.S.P.Q.2d (BNA) at 1052. The court granted summary judgment against the bulletin board operator, awarded statutory damages and attorneys' fees, and ordered delivery to the plaintiffs of the defendant's

been held liable for direct infringement of the patents.[137] These intermediaries (other than the OEM computer manufacturers) did not make, use, or sell the patented method or system. Rather, they only sold a software component of the system, i.e., DoubleSpace/MS-DOS 6 on a disk, which was also a material (article of manufacture) used to carry out the method.

The intermediaries could, in principle, have been liable for contributory infringement or for inducing infringement, but that would have required proof that they knew that DoubleSpace infringed the patents—which was unlikely. Retailers such as Egghead do not ordinarily know what algorithms are embodied in the computer programs that they sell. Moreover, they lack practicable means of finding that out. To hold such persons liable for infringement of rights in an algorithm, under a new law protecting software abstractions, might be both unfair to them and socially counterproductive.[138] That is one of the problems raised by the PTO guidelines that propose to issue floppy disk patents on algorithms.[139]

If Stac had owned a floppy disk patent covering the data-compression algorithm as such, instead of merely the conventional method and system patents that it did own, Egghead and other intermediaries in the distribution chain for MS-DOS would have been liable for direct patent infringement, despite their ignorance as to what compression algorithm Microsoft used in DoubleSpace. It is proposed under section 1001 to make it direct infringement to do any trafficking in an embodiment of a software abstraction, but it is also proposed that this not be done in a way that makes innocent intermediaries in a software distribution chain liable as direct

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[137] Direct patent infringement did occur when end users installed MS-DOS 6 from purchased floppy disks onto the hard disks of their computers (i.e., *made* the patented system in patent law parlance), and when they ran their computers under (executed) MS-DOS 6 (*used* the patented method and system). Ordinarily, Egghead did none of those acts and therefore did not commit direct infringement.

[138] If intermediaries in the distribution chain are liable for infringement despite lack of knowledge, it is probable that they will stop dealing with any firms too small to be relied on to provide indemnification. That would make it more difficult for small, start-up software vendors to enter the market and would increase the trend toward concentration in the software industry.

[139] See *supra* notes 16–20 and accompanying text.

to transmit them to Netcom, a network access provider, whose network access service the bulletin board, in effect, resold to subscribers of the bulletin board such as Erlich. *Id.* Netcom's computer in turn wrote the postings to its hard disk array or other nonvolatile memory device and at the same time made the postings available on the Usenet as part of the *alt.religion.scientology* newsgroup's postings and e-mail. *Id.* The same material then could be, and probably was, downloaded by many thousands of people having net access. (Testimony indicated that this newsgroup was very popular and had more than 20,000 "hits" per month.)

The Church of Scientology demanded of Netcom and the bulletin board that they remove the material and prevent repetition of the postings, because they infringed the Church's copyrights. *Id.*

Netcom and the bulletin board refused, asserting that they could not readily ascertain whether Erlich's use was a fair use or whether the Church owned valid copyrights in the material, and that net access providers had no duty or ability to police Usenet postings. *Id.* A copyright infringement suit followed.

The district court ruled that contributory infringement rather than direct infringement legal tests governed the liability of Netcom and the bulletin board. *Id.* at 1375. It also ruled that material disputed facts precluded summary judgment determination whether these defendants knew or should have known of the infringing nature of the postings at a material time as well as whether, if they should have known, their conduct was nonetheless shielded by a fair use defense. For additional discussion of the case, see Richard H. Stern, *MicroLaw: Bulletin Boards and Net Sites*, IEEE MICRO, Feb. 1996, at 7.

Under the standard that the *Netcom* district court adopted for copyright law, and that of proposed section 1001, a net access provider or party in a similar position does not initially have a state of mind that can make it liable for infringement, but once it receives notice of infringement it can become liable if it fails to make reasonable inquiry and thereafter respect the intellectual property rights of the notifier.

This is the same rule that ordinarily applies in patent law for willful infringement, and presumably it would apply for scienter in a contributory infringement case under 35 U.S.C. § 271(c). Case law concerning willful patent infringement imposes a duty to make reasonable inquiry upon receipt of notice of infringement. *See, e.g.*, Amsted Indus., Inc. v. Buckeye Steel Castings Co., 24 F.3d 178, 30 U.S.P.Q.2d (BNA) 1462 (Fed. Cir. 1994) (holding that specific charge of infringement places party on notice to avoid infringement, and requires it to seek competent legal advice); Ryco, Inc. v. Aggregate-Bag Corp., 857 F.2d 1418, 8 U.S.P.Q.2d (BNA) 1323 (Fed. Cir. 1988) (holding that potential infringer with actual

patent law rule will lead to less litigation expense and provide greater certainty of expectation for investors in commercialization of software than copyright law's more flexible rule. However, it would nonetheless be appropriate to consider copying and independent creation as factors that a tribunal may consider in determining the amount of compensation that an unauthorized user should pay. The issues of intent and knowledge deserve extended discussion and consideration before adoption of a statutory concept of direct infringement of rights in software abstractions, and the proposals made here must be regarded as tentative.

*Authorization.*The proposed language of section 1001 does not state that an infringing use or trafficking must occur without authorization for it to be infringement. The patent law defines infringement in terms of manufacture, use, or sale "without authority."[144] The copyright law gives a copyright owner the exclusive right "to do or authorize" various acts, such as reproduction, preparation of derivative works, and distribution.[145]

Yet, both patent and copyright law recognize license and other forms of express or implied authorization (for example, sale of goods embodying the protected subject matter) as defenses or exceptions to infringement.[146] The result is unnecessary duplication of the same concept. First, the accused defendant must act without authorization,[147] but then the defendant can escape liability by showing authorization. In contrast, the language proposed above for section 1001 does not mention authorization or its

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[144] 35 U.S.C. § 271(a) (1994).

[145] 17 U.S.C. § 106 (1994).

[146] Met-Coil Sys. Corp. v. Korners Unlimited, 803 F.2d 684, 231 U.S.P.Q. (BNA) 474 (Fed. Cir. 1986) (patents); American Int'l Pictures, Inc. v. Foreman, 576 F.2d 661, 198 U.S.P.Q. (BNA) 580 (5th Cir. 1978) (copyright).

[147] Should the plaintiff patent or copyright owner be expected to plead and prove as part of its affirmative case the fact that it did not authorize the defendant to use the invention or copyright? That would make no sense. The defendant accused of infringement should know of and control the facts concerning its authorization, if any. Therefore, the defendant should plead and prove that. *See, e.g., Foreman*, 576 F.2d at 665, 198 U.S.P.Q. (BNA) at 583. By the same token, non-authorization does not belong in the definition of infringement and should not constitute an element of it.

by preparing a computer program whose instructions cause a sort in accordance with the algorithm. One might use a programming language by preparing a computer program whose instructions are written in the language. One might use a command structure or command set by preparing a computer program that contains routines that are invoked by the commands.

Section 1003 uses the verb "prepare," rather than "write," for two reasons. First, as in the case of section 106(2) of the copyright law which establishes the exclusive right to prepare a derivative work,[151] it is not necessary that a computer program embodying a protected abstraction exist in a written form, such as a printout, or even in a permanent memory.[152] It is enough if the computer program exists in any form, such as on a screen or in a temporary memory. Second, "prepare" is neutral in terms of creative merit. There should be no requirement that an infringing use involve creation of a legally protected computer program. Indeed, it should suffice for infringement purposes if a person uses a non-human agency, such as a code-generator program, to prepare the infringing computer program.

Finally, the open-ended definition of "use" means that the statement in section 1003 that embodiment in a computer program is an infringing use is non-exhaustively illustrative. Accordingly, the definition in section 1003 does not exclude the possibility of other infringing uses. (This possibility is addressed in subsequent section 1005.)

Section 1004 open-endedly defines "trafficking" in terms of several acts that an infringer might do in respect of a computer program embodying a protected software abstraction. The first illustrative act, in subsection (a), is causing the computer program to be executed in a machine. The second illustration, in subsection (b), a group of acts suggested by copyright law,[153]

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[151] 17 U.S.C. § 106(2) (1994).

[152] *See* H.R. REP. NO. 94–1476, 94th Cong., 2d Sess. 62 (1976) (preparation of a derivative work can violate § 106(2) even though no copy is fixed in tangible form).

[153] *See* 17 U.S.C. § 106(1), 106(3) (1994).

C. *Indirect Infringement*

One may also be vicariously liable for infringement, under patent and copyright law alike, if one culpably causes another person to commit direct infringement.[157] As indicated earlier, a question that has repeatedly troubled courts is how much knowledge and what state of mind a person accused of causing another person to commit infringement must have to be held liable.

1. Statutory Language

Accordingly, it would be logical to provide a section 1002 following section 1001, set out above, to deal with acts of indirect or vicarious infringement, based on the approaches taken in patent and copyright law. The proposed software rights statute must also describe the state of mind and kind or amount of knowledge that makes a vicarious infringer liable.

> **§ 1002. Indirect infringement**
>
> (a) Subject to [later sections describing exemptions and limitations], a person infringes rights in a software abstraction protected under this Act if the person, in this or a foreign country, while having the state of mind described in subsection (b)—(i) conspires with, (ii) actively induces, or (iii) intentionally commits acts, or engages in conduct, that causes—another person to use, or traffic in an embodiment of, the protected software abstraction within the United States.
>
> (b) A person is liable for infringement under subsection (a) only if, when the person acted, the person knew or should have known that:
>
> (1) the subject matter of the use or trafficking was protected;
>
> (2) the other person would probably use or traffic in the subject matter and would thereby violate section 1001; and

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[157] See *supra* text accompanying notes 82–96.

abroad that are destined for infringing sale or use within the United States.[160] Therefore, the beginning of section 1002(a) states that a person may be vicariously liable for another's direct infringement, as a result of the person's acts "in this or a foreign country."[161] Accordingly, if a person shipped computer programs embodying a protected software abstraction to a customer in the United States, while having the requisite state of mind (described in section 1002(b)), the person could be liable under section 1002(a) even though title to the products passed abroad.[162]

3. Conspiracy

Clause (i) of subsection (a) makes conspiracy to commit infringement a basis for vicarious liability. As indicated earlier, case law supports this application of conspiracy law, although it has been unclear whether the claims arise under federal intellectual property law or under state civil conspiracy law.[163] Clearly, if a federal statute expressly provides for such a claim, as here, the claim arises under the federal statute rather than state law. That is more appropriate than relying on case law. It is also more productive of uniformity of law and therefore certainty of expectation. Presumably, courts would apply the general body of federal law concerning conspiracy.[164]

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[160] *See* North Am. Philips Corp. v. American Vending Sales, Inc., 35 F.3d 1576, 1579–80, 32 U.S.P.Q.2d (BNA) 1203, 1205–06 (Fed. Cir. 1994) (interpreting as domestic locus delicti of patent infringement, applying Illinois long-arm statute).

[161] The quoted words appear in 35 U.S.C. § 102(a) and (b), and therefore presumably would be interpreted to have the same meaning here.

[162] See *supra* note 68.

[163] See *supra* note 98 and accompanying text.

[164] Numerous federal statutes proscribe conspiracies and a substantial body of case law exists under these statutes. *See, e.g.*, 15 U.S.C. § 1 (1994) (conspiracies in restraint of trade); 18 U.S.C. § 371 (1994) (conspiracies to commit offense against, or defraud, United States); *id.* § 1951 (conspiracy to interfere violently with commerce); *id.* § 1962(d) (RICO conspiracy); 42 U.S.C. § 1985 (1994) (civil rights conspiracy).

proposed clause) the customer's infringing activities.[170] The word "intentionally," as used in clause (iii), refers to an actor's doing the challenged acts or conduct intentionally, rather than doing them inadvertently or through mere carelessness; it does not refer to the actor's state of mind concerning the likely effects of the actor's challenged acts or conduct or concerning intellectual property rights, which subsequent subsection (b) of section 1002 addresses.

6. Culpable Knowledge For Liability

Subsection (b) of section 1002 describes the culpable state of mind to which subsection (a) refers. The issue of culpable state of mind for imposition of liability in a case of indirect infringement is complex and controversial. The Supreme Court, in its only decision turning on the issue, divided very closely on how to interpret congressional intent regarding scienter requirements in contributory infringement cases.[171] Congress itself had difficulty and reworded section 271(c) before passing the law, in an effort (perhaps not wholly successful) to clarify the matter.[172]

Subsection (b) uses a "know or should know" standard, and applies it to three elements, each of which must be shown for liability. First, the accused vicarious infringer must actually have known, or should have known, that the subject matter of the direct infringer's use or trafficking, on which vicarious liability is to be based, was legally protected. For example, consider a direct infringer that traffics in a computer program embodying a legally protected algorithm, and an accused vicarious infringer that has conspired with the direct infringer to market the computer program. To be liable, the accused vicarious infringer should have known that the computer program embodied a legally protected algorithm or at least embodied some

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[170] Such conduct is not within the coverage of section 271(c) of the patent law. *Aro II*, 377 U.S. at 488, 141 U.S.P.Q. (BNA) at 681.

[171] *Id.*

[172] *See id.* at 525–27, 141 U.S.P.Q. (BNA) at 700–01 (Black, J., dissenting). Moreover, the Court split on the significance properly attached to the congressional exercise in rewording. *Compare id.* at 488, n.8, 141 U.S.P.Q. (BNA) at 687 n.8 *with id.* at 527–27, 141 U.S.P.Q. (BNA) at 700–01 (Black, J., dissenting).

conduct to act as a substantial and material causative factor,[174] and indicates that the challenged conduct need not be the sole causative factor involved. (Ordinarily, for example, the direct infringer's volition is a major factor; opportunity to infringe directly is another.)

7. Presumptions

Subsection (c) creates rebuttable presumptions, setting default resolutions when testimonial and documentary evidence is equivocal or nonexistent. Patent law, in contrast, has what amounts to an irrebuttable presumption, or rule of substantive law, corresponding to the second of these provisions (the staple article rule),[175] and an unclear state of affairs or no rule at all as to the first.[176] It is more appropriate that the court should consider evidence, if a party wants to offer it, on a party's state of mind. That

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[174] *See* RESTATEMENT (SECOND) OF TORTS ch. 16, §§ 431–33 (1965); *see also* Davis v. Avco Fin. Servs., Inc., 739 F.2d 1057, 1066–67 (6th Cir. 1984) (discussing concept of substantial causative factor in context of securities law liability).

[175] 35 U.S.C. § 271(c) (1994) (seller of a staple article or article capable of substantial noninfringing use cannot be liable for contributory infringement); Dawson Chem. Co. v. Rohm & Haas Co., 448 U.S. 176, 198–99, 206 U.S.P.Q. (BNA) 385, 397 (1980); *see* Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 442, 220 U.S.P.Q. (BNA) 665, 678 (1984) (adopting similar rule for copyright law). There would be no contributory infringement liability even though the seller knew that the customer intended to commit patent infringement. That a person sells a product specially adapted for infringement is an element of the patentee's case under 35 U.S.C. § 271(c), but the patentee must also establish the accused person's culpable knowledge by providing evidence of it beyond the fact of special adaptation. *Aro II*, 377 U.S. at 488, 141 U.S.P.Q. (BNA) at 686–87.

[176] Under current patent law, lack of a substantial noninfringing use is a sine qua non of liability, but it is not necessarily enough to make out even a prima facie case of contributory infringement. In the case of a nonstaple chemical, however, with no use except in infringement of a process patent, sale of the nonstaple chemical is contributory infringement and therefore the patentee has the right to control the sale of the nonstaple. *See Dawson Chem. Co.*, 448 U.S. at 223, 206 U.S.P.Q. (BNA) at 408 (decided 5–4). In a dissenting opinion, Justice Stevens said that the logic of the majority would imply that nonstaple supplies for use with a patented machine should enjoy a similar dispensation, but he added that it "remains to be seen" whether all five members of the majority would go that far. *Id.* at 241, 206 U.S.P.Q. (BNA) at 415.

injure the policy of protecting free and open competition in staple articles. A rebuttable presumption of innocence sufficiently protects that policy.[178]

D. *Unforeseen Use And Trafficking*

The definitions of "use" and "trafficking" in sections 1003 and 1004 are open-ended. They imply the possibility that unforeseen kinds of use, and trafficking in embodiments, of computer software abstractions now exist or may in the future exist as a result of shifts in technology. Some degree of flexibility is therefore desirable. On the other hand, it would be destructive of predictability and security of investment to allow courts carte blanche in amplifying the concepts of use and trafficking.

A compromise would be to allow courts to expand these concepts, but only within well defined limits. Thus, one requirement for expansion could be that the expanded concept is within the penumbra of what the statute already articulates, that the additional right or additionally proscribed conduct is of the same character as the things listed in sections 1003 and 1004 as examples of use and trafficking. A further requirement could be that it is necessary to make the addition, to carry out the purposes of the statute.[179] Language to this effect follows:

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[178] The policy is discussed in *Sony*, 464 U.S. at 440–42, 220 U.S.P.Q. (BNA) at 677–78. The majority's discussion is rather broad and is not probing. The dissenting opinion does not attempt deconstruction of the policy argument. Perhaps *Sony* was a poor vehicle for illuminating the competitive policies at stake. The videotape recorder involved in *Sony* was a product that each customer probably would use some of the time for noninfringing purposes and some of the time for infringing purposes. The more usual case, at least in patent law, involves the sale of a product (such as a raw material) that some customers will use all of the time for noninfringing purposes, while some other customers will use the same product all of the time for infringing purposes. If the first group of customers loses access to the product, and thus has difficulty in obtaining the product for their use, because of the existence and conduct of the second group, legitimate trade and commerce will be burdened.

[179] Rather than leave it to the courts to guess what are the purposes of the statute, a preliminary section (before what is set out as section 1001 in this article) should declare them. For example: "It is a purpose of this Act to encourage and promote the progress of computer software art." More particular statements of purpose and policy might be in order, such as that a statutory purpose is "to encourage commercial development of software

copyright) infringement actions.[180] Before a court ruled in a given case that a new form of conduct should be considered an infringing use, or a form of unlawful trafficking, the court would need to conclude two things, as a matter of law. First, the challenged conduct must be equivalent to, or of like character as, acts and conduct described in sections 1003 or 1004—in other words, *ejusdem generis* with what the statute already covers.[181] Second, the court must conclude that the given acts or conduct must be considered software infringement to avoid defeating the statutory purposes, such as those of encouraging and promoting software progress. If the court reaches both legal conclusions, it may add the challenged conduct to the statutory concept of use and trafficking.[182] Once one court has so held, other courts would be entitled to follow the principle of stare decisis. If appeals in these cases were centralized in a single court of appeals, presumably the Federal Circuit, a uniform, predictable body of federal law would develop.

A very expansive version of section 1005 might address a further ramification of trafficking, but that would probably be unwise. The statute could make it an act of infringement to use or deal in goods manufactured by use of a computer program embodying subject matter protected by the Act. In 1988, Congress added section 271(g) to the patent law, which makes it patent infringement to sell or use a product made by unauthorized use of a patented process.[183] For example, if bricks are made by a patented process, a contractor who knowingly procures the bricks and builds a house with

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[180] *See* 28 U.S.C. § 1338(a) (1994) (giving federal district courts exclusive jurisdiction over cases arising under the patent or copyright laws).

[181] *See* Third Nat'l Bank v. Impac Ltd., Inc., 432 U.S. 312, 322 (1977); Hilton v. Southwestern Bell Tel. Co., 936 F.2d 823, 828 (5th Cir. 1991), *cert. denied*, 502 U.S. 1048 (1992); Samuels, Kramer & Co. v. C.I.R., 930 F.2d 975, 980 & n.2 (2d Cir.), *cert. denied*, 502 U.S. 957 (1991).

[182] Presumably, this will seldom occur. However, it is a safeguard against lack of omniscience, and avoids forcing Congress to revisit the matter. It is believed that the standard set forth in section 1005 is narrow enough to avoid improper delegation of legislative power or undue vagueness.

[183] 35 U.S.C. § 271(g) (1994). The effect of section 271(g) is modified by section 287(b). For example, section 287(b)(2) makes remedies unavailable against innocent customers.

traffics in the computer program. Probably, that use can reasonably be characterized as preparing a computer program that embodies the programming language.

Other forms of software abstraction, for example, an instruction set,[187] may present special problems. How does one use, embody, implement, and/or traffic in an instruction set? An instruction set is typically devised by a designer of a microprocessor chip, who determines, on a cost-benefit basis, which instructions are worth implementing in the chip.[188] A trade-off is made and the instruction set is determined; then, it is physically implemented in the structure of the chip.[189] A second way in which an instruction set is devised is in the creation of a computer programming language,[190] which is rarer because there are fewer languages than chips. Here, the instruction set is embodied and implemented in the language so devised. A command structure for an application program, a program for performing a specific task, such as the Lotus 1-2-3 spreadsheet program[191] or Dbase II database manager program,[192] is similarly devised

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[187] See *supra* note 8.

[188] Each possible instruction added to the chip increases its capability, but does so at the cost of additional operational overhead. In the 1980s Intel and Motorola led a trend toward increasingly complex instruction set computing (CISC microprocessors such as the 486 and 68040). In the 1990s there has been increasing movement to use reduced instruction set computing (RISC microprocessors) to realize greater speed and facilitate parallel processing.

[189] The implementation may be part hardware and part software, or it may be entirely in hardware. Entirely hardware implementations run faster, but software implementations are easier to modify, customize, or redesign.

[190] For a discussion of why computer programming languages operate at too high a level of abstraction to be protected under existing copyright law, see *Programming Languages*, *supra* note 8, at 363–71, 378.

[191] *See* Lotus Dev. Corp. v. Borland Int'l, 49 F.3d 807, 34 U.S.P.Q.2d (BNA) 1014 (1st Cir. 1995) (holding command structure of 1–2–3 to be "method" unprotected by copyright law), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996) (per curiam); *see also* Lotus Dev. Corp. v. Paperback Software Int'l, 740 F. Supp. 37, 67–68, 15 U.S.P.Q.2d (BNA) 1577, 1599 (D. Mass. 1990) (discussing command structure of 1–2–3). The *Lotus–Borland* case was argued in the Supreme Court on January 8, 1996, *see* 64 U.S.L.W. 30 (Feb. 13, 1996), and within a few days was affirmed 4–4 without opinion.

A data structure[194] may also present special problems. Some data structures are imposed on a memory by the relevant computer program.[195] When that occurs, one might say that the protected software abstraction (data structure) is implemented or embodied in the computer program (which in turn embodies the data structure in the memory), so that proposed section 1003 covers the use of the data structure. On the other hand, a data structure may merely be described in terms of its characteristics or as having been generated in accordance with a given method or algorithm.[196] It is possible for data to be organized in accordance with a desired data structure by some other means, such as the hardware arrangement (architecture) of the memory device. In such cases, it would be doubtful that one could properly say that the data structure is embodied in a computer program.

Furthermore, commercially relevant trafficking in an embodiment of a data structure probably does not occur by trafficking in a computer program. More likely, a data structure is exploited by organizing a memory in accordance with the data structure. That may be regarded as use or trafficking, as one chooses. If one wants to speak of both use and trafficking, one could regard design of the hardware arrangement, or of whatever other means of imposing the data structure is employed, as use. One could then regard imposition of the data structure on the memory, and execution of a computer program having access to the memory, as acts of trafficking.

The point is that an expanded concept of use, and perhaps of trafficking as well, may be needed to cover additional software abstractions such as instruction sets and data structures. More important, these problems serve warnings that, as one addresses subject matter other than algorithms, things may become less simple and straightforward than they may at first seem. The concepts of use and trafficking may apply more broadly or

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[194] A data structure is a methodology or scheme for organizing data in a memory device, i.e., a diskette or chip, or in an abstraction of them such as memory in general. See *supra* note 5 and accompanying text.

[195] *See In re* Lowry, 32 F.3d 1579, 1580, 32 U.S.P.Q.2d (BNA) 1031, 1032 (Fed. Cir. 1994) (stating that the data structure sought to be patented was one that an application program imposed on the data it used).

[196] *See In re* Warmerdam, 33 F.3d 1354, 1358, 31 U.S.P.Q.2d (BNA) 1754, 1757 (Fed. Cir. 1994) (involving data structure generated in accordance with an algorithm).

> (a) prepares a computer program that implements or embodies the protected software abstraction;
>
> *(b) devises means for causing a machine or device to embody a protected instruction set; or*
>
> *(c) devises means for causing data to be organized in a memory in accordance with a protected data structure.*

Subsection (a) brings forward the earlier version of proposed section 1003. Subsection (a) already covers preparation of a computer program that embodies a protected programming language (by being written in that language) or instruction set (by being written in a language or system utilizing the instruction set).

Subsection (b) covers design of a microprocessor or other device embodying a protected instruction set. The term "devises" is used here, as was "prepares" in subsection (a), to keep the verb neutral in connotation. The term "means" is not modified by "hardware" or "software," and therefore includes both hardware and software means. The term "machine or device" covers mainframes and microprocessor chips, as well as anything in between (including microprocessor-driven microwave ovens and braking systems).

The phrase "causing data to be organized in a memory" in subsection (c) is deliberately written in the passive voice. That avoids specifying who or what does the causing and organizing—a person, hardware configuration, or software. Another formulation, "for causing a memory to organize data," for example, could place focus on the structure of a memory device as cause of the data being organized or erroneously imply activity by the memory, and by implication could exclude the idea that execution of a computer program that does the organization is an act of infringement.[200]

The same considerations suggest reexamination of section 1004's partial definition of trafficking. Trafficking in an instruction set is already covered for computer programs embodying a protected instruction set or data structure. Otherwise, trafficking is probably important only in regard

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[200] As the computer program did in *In re* Lowry, 32 F.3d 1579, 32 U.S.P.Q.2d 1031 (Fed. Cir. 1994). *See supra* note 195.

antecedent the preamble's "any machine or device configured in accordance with a protected data structure."

The effect of the application of subsection (e)'s prohibition to a "configured machine or device" amounts to a codification of the PTO Software Guidelines' proposal that a medium encoded with a protected data structure is protected as such, so that direct infringement standards apply, rather than merely those of contributory infringement.[202] That effectively makes the infringement standard of the Act extend in some instances to a computer having a hard disk in which an infringing computer program is installed, assuming that the scienter test at the end of section 1001 is also satisfied. This may have unintended consequences in regard to remedies such as seizure and on the royalty base for licensing or damages calculations. That possibility would need to be considered in framing the remedies portion of the Act.[203]

F. *Actionable Similarity*

In proscribing use and trafficking in a protected software abstraction, we have so far assumed, without so stating, that we can recognize involvement of a protected software abstraction in use and trafficking when we see it.[204] Copyright and patent law make the same unarticulated assumptions, for they never define how closely an accused product (that is, one alleged to infringe intellectual property rights) must resemble the legally protected subject matter for the accused product (or those who deal in it) to infringe.

Copyright law protects a work, but the legal protection extends only to expressive aspects of the work and does not extend to the more abstract, "idea" aspects of the work. Thus, a copyright covers some portions of a large, ill-defined composite, from which infringers may select and pluck out portions which they reproduce, imitating it more or less closely, or otherwise exploit. If and only if expressive copied portions are substantial

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[202] See *supra* notes 17, 20.

[203] Such remedy issues are outside the scope of this article.

[204] *Cf.* Jacobellis v. Ohio, 376 U.S. 184, 197 (1964) (Stewart, J., concurring) ("I know it when I see it").

can probably be expressed accurately in terms of a specific combination of elements or steps.

That may not be so, however, for a programming language, command structure, or instruction set. They all have elements that can be listed, like the elements or steps of an algorithm, but one need not imitate all of the elements to have a generally similar thing. A sixty or eighty percent overlap of elements between two instruction sets, command structures, or programming languages might lead an objective scientific observer to consider that an unlawful appropriation occurred because the gist of the thing was taken.[208]

The unarticulated assumption that we know that a software abstraction is involved in a use or trafficking "when we see it" may be more justified for some software abstractions (for example, algorithms), and less justified for others (for example, programming languages). On the other hand, copyright makes the same unstated assumption of "we know it when we see it" with no greater, and perhaps less, justification. In any event, it does not appear feasible to provide a further particularization of proposed section 1001 in order to state a more precise and well articulated definition of when an accused product or act is so close (actionably similar) to a protected software abstraction as to attract or incur infringement liability.

To the extent that it is feasible to define a protected software abstraction in terms of something like an ordinary United States patent claim, to be done presumably in the official documentation of legal rights in

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[208] *See* Motorola, Inc. v. Hitachi, Ltd., 750 F. Supp. 1319, 14 U.S.P.Q.2d (BNA) 1769 (W.D. Tex.), *vacated*, 923 F.2d 868 (Fed. Cir. 1992). One of the issues in that case was whether Hitachi's instruction set for its microprocessor chip was similar enough to that of Motorola's microprocessor chip to warrant the conclusion that Hitachi had exceeded the scope of a patent license and therefore committed patent infringement. (Apparently, Motorola licensed Hitachi under the patents in the field of microprocessor chips not executing substantially the same instruction set as certain Motorola microprocessor chips.) The court found that Hitachi's chip was capable of executing more than three-fourths of the Motorola chips' instruction sets, and therefore did "in fact execute substantially the same instruction set" as the Motorola chips. That led to a conclusion that Hitachi's chip was not licensed under Motorola's relevant patent and that Hitachi infringed the patent. *Id.* at 1328–29, 14 U.S.P.Q.2d (BNA) at 1774–76.

format resembling a claim to a system[212]—i.e., a somewhat abstract formulation of a machine or device—or as the product of a process.[213]

In principle, an instruction set could be claimed peripherally, perhaps using a set of claims of varying scope, like the concentric circles of an archery target.[214] But it is not clear that this is a useful or even feasible way to claim an instruction set or a programming language.

An alternative approach, in which the documentation of legal rights states nothing at all about scope, as occurs under copyright and mask work law,[215] or states merely that the scope of the rights is substantially as described in the application and accompanying papers,[216] will result in uncertainty about the scope of rights and a far more difficult task of

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[212] *See In re* Lowry, 32 F.3d 1579, 1581, 32 U.S.P.Q.2d (BNA) 1031, 1033 (Fed. Cir. 1994).

[213] *See Warmerdam*, 33 F.3d at 1358, 31 U.S.P.Q.2d (BNA) at 1757 (claim 6).

[214] Claim sets of this type are typical in ordinary patents. The first claim lists only the absolutely indispensable elements, for example, "1. A and B." Later claims add other elements that may be useful but are not absolutely essential, for example, "2. A, B, and C," "3. A, B, and D," and "4. A, B, C, D, and E." Applicants draft such claims because they are not sure what prior art may exist that invalidate the earlier claims or whether other defects may exist. *In re* Wakefield, 422 F.2d 897, 900, 164 U.S.P.Q. (BNA) 636, 638–39 (C.C.P.A. 1970). Other countries, however, such as Japan, do not permit extensive multiplication of claims. TETSU TANABE AND HAROLD WEGNER, JAPANESE PATENT LAW § 340 (1979); *see also* BRIAN C. REID, A PRACTICAL GUIDE TO PATENT LAW (2d ed. 1993) (briefly comparing several national styles of claim drafting).

[215] The Copyright and Semiconductor Chip Protection Acts do not utilize claims. Under both statutes, the registrant deposits identifying material with the Copyright Office. *See* 17 U.S.C. §§ 408–09, 908 (1994). A fact finder subsequently must decide an allegedly infringing work of authorship or chip layout is substantially similar to the registered work or layout. For an example of difficulties in determining substantial similarity of chip layouts, *see* Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 24 U.S.P.Q.2d (BNA) 1401 (Fed. Cir. 1992).

[216] A claim that covers "substantially" what the entire patent describes is called a "central claim." A claim in a design patent or plant patent, which are existing types of petty patent, is a central claim. *See* 35 U.S.C. § 162 (1994); 37 C.F.R. §§ 1.153, 1.164.

infringement.[219] The software legislation proposed in this article follows the same pattern. Proposed section 1001 defined infringement in general terms as any use or trafficking. Sections 1011 and those sections immediately following it now state what is not infringement, even though the acts or conduct may fit within the general terms of section 1001.

A. *Authorization, In General*

As indicated earlier,[220] conduct that an intellectual property owner authorizes expressly or by implication cannot be infringement. That common law concept[221] is expressed in general terms in the following proposed statutory language:

> **§ 1011. Authorization and exemption, in general**
> Notwithstanding sections 1001 through 1005, a person does not infringe rights by engaging in acts or conduct that the owner of the rights has authorized expressly or by implication.

In general, acts and conduct that an owner of intellectual property rights authorizes expressly (such as by a license agreement) or by implication (such as by sale of a copy of a computer program) are not infringement. Thus, the sale or licensing of a compiler program would ordinarily confer on customers the right to compile programs with the compiler, for commercial or other purposes, unless the circumstances

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[219] *See* 17 U.S.C. §§ 107–120 (1994). These provisions all begin with a phrase such as "notwithstanding section 106 . . . ." *See also id.* §§ 906–907 (similar pattern in SCPA).

[220] See *supra* notes 144–47 and accompanying text.

[221] The copyright and patent statutes do not have any express provisions corresponding to this, and apparently no other federal intellectual property law does. The copyright and patent laws address absence of authorization obliquely as part of the definition of infringement. *See* 17 U.S.C. § 106 (1994) (giving copyright owner exclusive right "to authorize" specified acts); 35 U.S.C. § 271(a) (1994) (stating that "whoever without authority" does specified acts infringes patent).

It now provides and promotes an auxiliary program of its own, "Charlie." Charlie performs the same function as YourPal. Nanosoft now tells Dummypal that it must stop infringing Nanosoft's rights as DummyPal does by providing customers with YourPal. Dummypal tells Nanosoft that if that is how it feels, Dummypal will simply procure the NS-DOS operating system software from BigBeige, which has a paid-up NS-DOS license from Nanosoft. Nanosoft responds that marketing YourPal will still be an act of infringement and Nanosoft will not tolerate it. Is this a case of estoppel by conduct or of implied authorization? Does it matter?

B. *Specific Exceptions And Limitations*

Sometimes, intellectual property law implies authorization in circumstances in which the owner of rights has no desire to authorize anything and the authorization is entirely constructive.[224] This is no different from a substantive rule of law that the given conduct is exempted or privileged. Clearly, the concept of implied authorization is not self-defining.

Among the limitations and exemptions, or constructive authorizations, that a law protecting software abstractions should have is the doctrine that the sale of an article embodying protected subject matter, by the rights owner or by a person that the owner licensed, becomes the property of the customer, who can then use the article and resell or otherwise traffic in it. Another is that such customers are privileged to make archival copies of abstraction-embodying computer programs, to protect against loss. Further, such customers should be entitled to debug and adapt such computer programs, so that they can effectively use what they bought. Such a law would appropriately also address reverse engineering and fair use—particularly in regard to learning and teaching the idea content of protected subject matter.

The language of section 1011 proposed above, without more, may therefore not be adequate to assure end users' needs and to provide

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[224] The situation is analogous to that of quasi–contract (contract implied by law) relative to express contract. A quasi–contract is a constructive contract imposed by operation of law to do equity and avoid injustice, despite the unwillingness of one of the parties to perform its duties. 3 CORBIN ON CONTRACTS § 561–62 (1960); *see also* Slade's Case, 76 Eng. Rep. 1074, 4 Coke 92b (K.B. 1602) (law will imply an *assumpsit* in any case in which a debt actually exists).

> the concepts or techniques embodied in the protected subject matter. It is not infringement to utilize the results of such analysis or evaluation to prepare a further computer program or other product unless trafficking in the program or product would be infringement even without occurrence of the preceding analysis or evaluation of the subject matter. It is not infringement to traffic in such an otherwise noninfringing further computer program or other product.
>
> (f) FAIR USE IN TEACHING.—It is not infringement for a person to reproduce or otherwise use, or traffic in an embodiment of, protected subject matter in a book or other instructional material, unless the subject matter is reproduced in a form practicably useable (i) for commercial purposes or (ii) as a substitute for products embodying the protected subject matter that the owner of the protected subject matter commercially distributes or licenses. Any use in a classroom or equivalent setting is rebuttably presumed a fair, noninfringing use.

This section provides important limitations on the rights described earlier and is of major importance in defining the contours of infringement. It enumerates specific exceptions, privileges, and limitations on rights in software abstractions, and declares that engaging in such acts and conduct is not infringement. That the conduct does not infringe rights in a software abstraction does not mean that the same conduct is necessarily immunized against rights under other statutes, such as the patent or copyright statutes. Nevertheless, avoidance of duplicative or inconsistent liability for the same acts or conduct is to be desired.[225]

The exemptions, privileges, and limitations in section 1012 directly benefit customers and end users of software, but they also have important functions that further broader public policy goals, such as promotion of

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[225] The appropriate supersessive or preemptive relationship between the proposed legislation and other bodies of law—particularly, federal copyright law and state contract and unfair competition law—is in the main beyond the scope of this article and therefore not addressed.

> Section 906(b) carries over to mask works the "exhaustion of monopoly rights" and "first sale" doctrine of 17 U.S.C. § 109(a) and many years of case law. As in the case of copyrighted products, the owner of a mask work has no right to try to exercise "remote control" over the pricing or other business conduct of its semiconductor chip customers, once the semiconductor chips have passed into their hands. Except where the Congress expressly orders otherwise, the exhaustion of any rights by the first authorized sale is a basic tenet of our intellectual property law.

Accordingly, unless special circumstances intervene, a purchaser of a computer program embodying subject matter protected under the statute is entitled to use the program without limitation or restriction. This article addresses some such special circumstances later.[230]

2. Archival Use

Subsection (b) permits copying for purely archival purposes, as copyright law does.[231] The copy may be in a different medium, such as tape or EPROM instead of diskette, or vice-versa, as long as the use is truly archival and not piratical. However, archived copies may not be sold in competition against the original seller.

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[230] See *infra* notes 286-95 and accompanying text. The "except" clause beginning this subsection of the proposed statute refers to this.

[231] *See* 17 U.S.C. § 117 (1994). Patent law has no comparable provision, and archiving something patented ordinarily does not make sense. Certainly, patent law would not allow one to make an archival copy of a patented product to protect against loss or damage. Patent law permits repair if that is feasible, but otherwise expects users to purchase new products when old ones wear out completely or are totally destroyed by accident. *See Aro I*, 365 U.S. at 346, 128 U.S.P.Q. (BNA) at 359; Carborundum Co. v. Molten Metal Equip. Innovations, Inc., 72 F.3d 872, 37 U.S.P.Q.2d (BNA) 1169 (Fed. Cir. 1995) (patentee of combination sells to customer pump component having no noninfringing use; customer's implied license as to combination patent expires when pump wears out).

compelled to operate on a do-it-yourself basis, which is impractical and unrealistic for most end users.[237]

5. Fair Use/Reverse Engineering

Proposed subsection (e) addresses one of two varieties of what may be termed "fair use" and subsection (f) addresses another. Subsection (e) addresses fair use in research and reverse engineering. In general, it follows the highly permissive approach suggested in a lower court decision on reverse engineering of copyrighted microcode, allowing reverse engineering so long as the final competitive product was not itself infringing.[238] Subsequent court of appeals opinions have taken a narrower and less permissive approach, allowing reverse engineering where it was necessary to obtain access to ideas concealed within the copyrighted program.[239] The Semiconductor Chip Protection Act (SCPA) has an elaborate provision addressing reverse engineering,[240] a practice which has long been important in the chip industry.[241] The SCPA wholly exempts products of reverse engineering, so long as they embody substantial effort by the late-comer

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[237] *See id.* at 1010, 13 U.S.P.Q.2d (BNA) at 1724.

[238] NEC Corp. v. Intel Corp., 10 U.S.P.Q.2d (BNA) 1177 (N.D. Cal. 1989) (computer microprogram resulting from reverse engineering is not copyright infringement if final commercial version of program does not itself use protected elements of original program, even though process involved some initial reproduction); *see also* E.F. Johnson Co. v. Uniden Corp., 623 F. Supp. 1485, 228 U.S.P.Q. (BNA) 891 (D. Minn. 1985) (approving unloading, listing of computer programs for reverse-engineering purposes, where only functional elements are taken for incorporation into competitive product).

[239] *See* Sega Enters., Ltd. v. Accolade, Inc., 977 F.2d 1510, 24 U.S.P.Q.2d (BNA) 1561 (9th Cir. 1992), *cert. denied*, 113 S. Ct. 1582 (1993); *see also* Bateman v. Mnemonics, Inc., 79 F.3d 1532, 38 U.S.P.Q.2d (BNA) 1225 (11th Cir. 1996) (following *Sega*); Atari Games Corp. v. Nintendo of Am., Inc., 975 F.2d 872, 24 U.S.P.Q.2d (BNA) 1015 (Fed. Cir. 1992) (applying Ninth Circuit law); DSC Communications v. DGI Technologies, 898 F. Supp. 1183, 1189, 37 U.S.P.Q.2d (BNA) 1496, 1502 (N.D. Texas 1995) (following *Sega*).

[240] 17 U.S.C. § 906(a) (1994).

[241] *See* CHIP PROTECTION, *supra* note 44, § 5.5 [A]-[B].

software typically involves disassembly and modification of computer code, beginning with a purchased copy of the original product. The reverse engineer typically loads a copy of the original computer program into a computer, storing it in memory. The computer program is then manipulated by other computer programs to derive its idea content.[247] The results of the reverse engineer's efforts are from time to time saved to disk in the computer. In the course of this process, a reverse engineer is likely to "make" the patented invention (if it is claimed as a disk encoded with a computer program) many times during reverse engineering. Assuming that the reverse engineer does not act purely for philosophical and noncommercial purposes, the conduct would be patent infringement.[248] If the infringing reverse engineering resulted in substantial commercial or industrial activity competitive with that of the patentee, the Federal Circuit would doubtless hold the activity not excusable on de minimis grounds, because even if the quantity of "making" was small the economic effect was not a trifle.[249] In short, the software patent guidelines would appear to make reverse engineering of patented software virtually illegal per se, even though reverse engineering is ordinarily tolerated with respect to ordinary electromechanical products.[250]

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[247] This procedure is described in Andy Johnson-Laird, *Technical Demonstration of Decompilation*, *in* RICHARD H. STERN AND LEO J. RASKIND, CASES AND MATERIALS ON INTELLECTUAL PROPERTY RIGHTS IN COMPUTER PROGRAMS AND RELATED SUBJECT MATTER 311 (vers. 0.4 1996). Johnston-Laird states that trying to reverse engineer a computer program without processing the program with a disassembler program and making printouts is akin to trying to mow a lawn with a nail scissors. *Id.* at 320; *see id.* at 324, 334.

[248] Roche Prods., Inc. v. Bolar Pharmaceutical Co., 733 F.2d 858, 862–63, 221 U.S.P.Q. (BNA) 937, 939–41 (Fed. Cir.), *cert. denied*, 469 U.S. 856, 225 U.S.P.Q. (BNA) 792 (1984).

[249] *Roche*, 733 F.2d at 863, 221 U.S.P.Q. (BNA) at 941.

[250] That might be a reason why a court might overturn the Software Guidelines, in a properly presented case (for example, a patent infringement action involving reverse engineering a floppy-disk patent—*Roche redux*, so to say). Since several Supreme Court decisions assert, and many lower court decisions hold, that reverse engineering a patented product is legitimate, the court might consider that this line of precedent cannot be overruled by PTO guidelines. If the two conflict, the one that gives way would have to be the agency's interpretation. (That would not

6. Fair Use/Teaching

Subsection (f) provides a further fair-use rule, which broadly exempts textbooks and similar instructional material. Use in a textbook or instructional diskette that teaches how to use a protected algorithm, programming language, instruction set, data structure, or other software abstraction is exempt unless the book or diskette acts as a practical commercial substitute for the protected subject matter. For example, it would be proper to set out and explain a sorting algorithm (or source code for a computer program using it) in a computer science textbook. It would be proper to publish a book explaining how to write programs in a given programming language. It would be proper to list and explain the elements of an instruction set, and teach the design of circuitry to implement it. It would be proper to set out verbatim examples of good and bad programming techniques, taken from actual commercial software products.

For purposes of this subsection, that a student could copy source code and eventually compile it, or could use a flowchart or algorithm in writing a competitive computer program, does not mean that the book or other material provides a substitute for the product of the owner of computer software rights. The proviso is intended to prevent supplying students with a commercial computer program for ordinary, immediate use in place of the regular commercial product, but it does not prevent computer science departments from teaching students how to do programming, including teaching by example.

The last sentence of subsection (f) provides that classroom (and similar) use is rebuttably presumed fair. It is intended that doubts, and burdens of proof, be resolved in favor of teaching use, and that harassment of electrical engineering and computer science teachers and their employers be avoided and discouraged. Perhaps, a rebuttable presumption does not go far enough, and the presumption should simply be a substantive rule of law. One cannot infringe a patent or copyright by teaching students in a classroom the idea content of patented or copyrighted subject matter, and rights under a law protecting software abstractions should be no different. First, neither patents[252] nor copyrights[253] protect idea content, as such—that

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[252] Diamond v. Diehr, 450 U.S. 175, 185, 209 U.S.P.Q. (BNA) 1, 7 (1981).

[253] Baker v. Selden, 101 U.S. 99 (1879).

intellectual property rights evolved in case law before they were codified into the copyright statute, and most of them applicable to patents have not even been so codified. License, laches, and estoppel are nonstatutory defenses in patent and copyright law.[258] Fair use was originally a judicial product,[259] and so was the first sale/exhaustion doctrine.[260]

Accordingly, the following provision parallels section 1005's authorization to courts to expand the concepts of use and trafficking, where necessary and appropriate:

> **§ 1013. Additional limitations on rights**
>
> A person does not commit infringement by engaging in acts or conduct that a court, in an infringement action under this Act to which the person and the owner of rights are each party, determines:
>
> (a) are equivalent to, or are of like character as, acts and conduct described in section 1012;
>
> (b) must be considered privileged use of such subject matter to avoid defeating the purposes of this Act, as set forth in section 901.

This provision is worded similarly to, and is *in pari materia* with, section 1005. What has been said of that provision, above, applies here.[261]

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[258] See *supra* notes 29, 30, 32, 33, 37, 38, 40 and accompanying text.

[259] Harper & Row Publishers, Inc. v. National Enters., 471 U.S. 539, 549, 225 U.S.P.Q. (BNA) 1073, 1076 (1985); Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 447 & n.29, 220 U.S.P.Q. (BNA) 665, 680 & n.29 (1984).

[260] *See* Adams v. Burke, 84 U.S. (17 Wall.) 452 (1873) (patent law); Bobbs-Merrill Co. v. Straus, 210 U.S. 339 (1908) (copyright law).

[261] It is considered unnecessary and inappropriate to include laches, estoppel, and similar common law defenses in the exceptions section. Laches, for example, is not an exception to the scope of intellectual property rights or an immunity or privilege to a charge of infringement. It is simply a general equitable defense to any civil claim, made applicable

restrictions or limitations on customer use of products embodying subject matter protected under the proposed software abstraction law be legally effective? To the extent that they are legally effective, that runs counter to the exhaustion doctrine of section 1012(a). On the other hand, good reasons may support some restrictions of this type.

There are several possible approaches that a statute establishing intellectual property protection for software abstractions could take. Clearly, inaction is one possible approach. That would leave it to the federal and state courts[264] to decide how to address restrictive notices. To some extent, that is what happened in the copyright field. The result has been a confusing patchwork of inconsistent regulation, and little predictability.

Two states passed statutes expressly regulating restrictive notices.[265] The Fifth Circuit held the Louisiana statute authorizing shrink-wrap licensing to be preempted by the federal Copyright Act,[266] because the state law's authorization of vendor prohibition of adaptation conflicted with section 117's grant of an adaptation right to owners of copies of computer programs.[267] The Third Circuit has held a shrink-wrap license ineffective

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similar license involving a patented machine, see Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 506–07 (1917).

Similar issues may arise when the restriction occurs in a negotiated, bilateral contract between customer and proprietor of intellectual property rights, rather than merely in a label or similar notice. If that kind of restriction is important enough to address, the proposal described here can readily be expanded to cover it.

[264] State legislatures could also act, rather than leave it to the courts of their states to interpret existing statutes that might apply or extend existing common law doctrines.

[265] ILL. ANN. STAT. ch. 29, para. 803 (Smith–Hurd 1986), *repealed by* 1987 ILL. LAWS 85–254, § 1, and 85–264, § 1; LA. REV. STAT. ANN. § 51:1963 (West 1987).

[266] Vault Corp. v. Quaid Software, 847 F.2d 255, 17 U.S.P.Q.2d (BNA) 1281 (5th Cir. 1988).

[267] *See* 17 U.S.C. § 117 (1994).

Fifth Circuit decision holding the Louisiana shrink-wrap licensing law preempted, and generally eliminate the preemption issue. In turn, that would foster diversity of state regulation in the field, which would interfere with nationwide marketing of software on a uniform basis. Moreover, the proposal would appear to effect a repeal of the federal antitrust laws, insofar as they apply to restrictive licensing arrangements of this kind,[271] which may be both undesirable and unacceptable.

The approach that this article proposes is enacting federal legislation fully occupying the field and holding restrictive notices enforceable if and only if reasonable and adequately noticed. That would provide uniformity of regulation, thereby enhancing business certainty and promoting security of investment in the commercialization of products embodying protected software abstractions. It is also believed that this represents the better legal view to take of such restrictions.

A. *Ineffective Notices*

Software proprietors often attempt to avoid the impact of the exhaustion doctrine by designating a transaction as a license or bailment rather than a sale, although the transaction has the earmarks of a sale. Courts have rejected that approach out of hand,[272] and should do so.

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[271] *See* Munters Corp. v. Burgess Indus., Inc., 450 F. Supp. 1195 (S.D.N.Y. 1978) (enforceability of express agreement restricting customer's use of patented product is determined under rule of reason).

[272] *See* Straus v. Victor Talking Machine Co., 243 U.S. 490, 500–01 (1917); Bauer & Cie. v. O'Donnell, 229 U.S. 1, 16 (1913). These Supreme Court decisions, of course, predate the software era and simply represent general statements of principle about the legal efficacy of calling what looks like a sale, a license.

For a decision in the computer software context, see Vault Corp. v. Quaid Software, Ltd., 847 F.2d 255, 7 U.S.P.Q.2d (BNA) 1281 (5th Cir. 1988). In that case, a software vendor sold software subject to a "shrink wrap" license that purported to designate a sale as a license and then went on to impose licensing restrictions against reverse engineering. The Fifth Circuit held that this restriction was inconsistent with federal copyright law's grant of adaptation rights to software customers, *see* 17 U.S.C. § 117 (1994), and that it was therefore preempted by the Copyright Act. 847 F.2d at 270, 17 U.S.P.Q.2d (BNA) at 1295.

> the characteristics of sales of the copies, machines, or devices.

Thus, a notice on a mass-marketed diskette or its packaging that stated that the vendor retained title, that the customer was a mere licensee, and that the customer must not make archival copies of the program or debug it would be without legal effect. The phrase, "under any law," makes this provision supersessive and preemptive.[274] That the notice is ineffective does not mean that the noticing party is subject to any sanction under section 1014. The proposed Act imposes no sanction on an owner of rights for wrongfully using a restrictive notice.[275]

B. *Effective Restrictive Notices*

On the other hand, an owner of rights should be allowed to withhold authorization of some uses, where this action is reasonably calculated to achieve a legitimate objective of the owner. Determining the proper meaning to be given "some uses," "reasonably calculated," and "legitimate objective" may be a formidable task. Indeed, it may be so formidable that addressing this issue in a software abstraction law could create a serious obstacle to its passage, and lead to the conclusion that the issue should be put aside.

Accordingly, this provision is drafted, in the first instance, as a self-contained module of the proposed legislation. Its presence is not necessary to the effectiveness of other, earlier sections. Its elimination does not destroy

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[274] *See* Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 9 U.S.P.Q.2d (BNA) 1847 (1989). The significance of this point is discussed *infra* at note 297.

[275] Sanctions, if any, would be under some other federal law, or under state law. The misuse doctrine might also apply, but that is merely an application of the general equity principle concerning clean hands, *see* Morton Salt Co. v. G.S. Suppiger Co., 314 U.S. 488, 490, 493–94 (1942), rather than a sanction under this Act.

competition substantially in the market for any product whose sale, or any service whose provision, does not otherwise infringe rights in the software abstraction; and

(3) the limitation or restriction does not violate any specific prohibition imposed by federal statute or other positive law, or the stated policies of this law.

(d) A limitation or restriction imposed solely to prevent infringement of intellectual property rights is rebuttably presumed reasonable. A limitation or restriction against conduct described in subsections (b) to (f) of section 1012 [debugging, fair use, etc.] is rebuttably presumed unreasonable. A price-fixing limitation, condition, or restriction is conclusively presumed unreasonable. There is no automatic presumption of market power by reason of ownership of rights in a software abstraction.

(e) Notice is adequate for purposes of this section if the patentee gives the customer full, unambiguous, written notice of the restriction prior to the distribution to the customer of the product embodying the protected software abstraction, and gives such notice to the customer's predecessors, if any, in title to the product prior to the distribution of the product to them.

(f) This section is intended fully to occupy the field of legal regulation of the subject matter, and it shall not be contravened, modified, or supplemented by any other provision of any law.

1. What This Section Authorizes

Subsection (a) of proposed section 1015 authorizes owners of software abstraction rights to impose reasonable limitations and restrictions on their customers and cause their licensees to impose them on their customers, down the distribution channel. They may do so by causing the customers to receive adequate notice before they purchase products

functionally equivalent.[280] On the other hand, the Federal Circuit may have effectively overruled the old line of authority in this field.[281]

The question is particularly important in software marketing, in which customer restrictions of one kind or another are very common. It is therefore considered important to provide a clear, predictable rule for owners of software rights, so that they may enjoy relative security of business expectations. It may even be better to have a clear rule, whatever it is, than to have uncertainty.[282] Accordingly, if it proves that the weight of informed opinion is contrary to what this article proposes for these restrictions, a provision uniformly regulating the matter in a contrary fashion would nonetheless be desirable in order to provide more certainty.

2. Legal Effect Of Notice

If a customer intentionally disobeys a restrictive notice that section 1015 authorizes an owner of rights to impose, subsection (b) of section 1015 provides that the customer's disobedient act removes the "traffic-authorizing" effect[283] of the customer's purchase of a product embodying

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[280] *See* United States v. General Elec. Co., 272 U.S. 476 (1926); Baldwin-Lima-Hamilton Corp. v. Tatnall Measuring Sys. Co., 268 F.2d 395, 122 U.S.P.Q. (BNA) 1357 (3d Cir.), *cert. denied*, 361 U.S. 894 (1959); United States v. Ciba-Geigy Corp., 508 F. Supp. 1118 (D.N.J. 1976) (use restrictions on product sold to customers violative of Sherman Act; use limitations imposed on same parties as manufacturing licensees for same products not violative of Sherman Act).

[281] *See* Mallinckrodt, Inc. v. Medipart, Inc., 976 F.2d 700, 24 U.S.P.Q.2d (BNA) 1173 (Fed. Cir. 1992). *But see* Intel Corp. v. ULSI Sys. Technology, Inc., 995 F.2d 1566, 27 U.S.P.Q.2d (BNA) 1136 (Fed. Cir. 1993), *cert. denied*, 114 S. Ct. 923 (1994). For a general review of the case law through *Mallinckrodt*, see *Post–Sale Restrictions*, *supra* note 276, at 3–7.

[282] See *Post–Sale Restrictions*, *supra* note 276, at 8–9 for an anecdotal discussion of patent counsel uncertainty.

[283] The traffic to which proposed section 1015(b) refers is the traffic defined in proposed section 1004, such as execution of a computer program in a computer, distribution of a copy of a computer program, and transmission of a computer program among computers.

Thus, an owner of software abstraction rights may impose a restriction on customers if the three conditions of subsection (c) are satisfied.

First, the restriction must be one "designed and intended to overcome one or more obstacles to marketing embodiments of the protected software abstraction or otherwise commercially exploiting it." Moreover, the restriction must not be "substantially greater in scope or duration than is necessary to do so."

This requirement may be illustrated by a hypothetical case in which an owner of rights in a new data-sorting algorithm sells and licenses several different programs implementing the algorithm. The owner licenses program A only for use with computer systems having at least 32 MB of random-access memory (RAM), and sells program B labelled for resale to, and use by, only those customers whose system has at least 4 MB of RAM. The owners's sole reason is that program A works properly only in systems having at least 32 MB of RAM, and program B works properly only in systems having at least 4 MB of RAM. In systems having less memory, the programs "crash" and cause users to lose data. The technology is new and just entering the market. If the technology gets a bad reputation for crashing and losing users' data, it will not succeed in penetrating the market. The owner's conduct is reasonable.[287] The owner is entitled to impose the needed limitation or restriction, and thus can freely engage in a nationwide marketing program embodying the limitations and restrictions described.

Second, "those persons responsible for the limitation or restriction do not intend that it shall, and its actual and probable effect is not to, lessen competition substantially in the market for any product whose sale, or any service whose provision, does not otherwise infringe rights in the software abstraction." Restated, the requirement is that the owner or its licensees (whoever instigated the restriction[288]) do not have a purpose to limit

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[287] *See* Dehydrating Process Co. v. A.O. Smith Corp., 292 F.2d 653 (1st Cir.), *cert. denied*, 368 U.S. 931 (1961); United States v. Jerrold Electronics Corp., 187 F. Supp. 856 (E.D. Pa. 1960), *aff'd on other grounds*, 365 U.S. 567 (1961) (per curiam).

[288] There is no requirement here that the restriction originate from the owner. A licensee may demand it, for example, as when a licensee demands an exclusive field license as inducement to make the investment needed to commercialize the subject matter in a particular application. *See*

The burden of adducing evidence on these matters lies with the proponent of the restraint (the party asserting the lawfulness of the restraint) where it controls the relevant information, and lies with the adversary of the restraint (the party asserting the unlawfulness of the restraint) where it controls the relevant information. Neither party should be expected to prove a "universal negative." The burden of proof (persuasion) on all matters is by a preponderance of evidence. Thus, the proponent of the restraint would be expected to show its intent to overcome commercial obstacles. Its adversary would be expected to come forward with evidence of any excessiveness in the scope of the restriction, which if probative would require the proponent to show the actual necessity of the allegedly excessive conduct. Further, the adversary would be expected to show any conflict with positive law or statutory policies.

Subsection (d) provides several presumptions as to reasonableness, as an aid to predictability of law. Thus, an anti-rental notice, imposed solely to prevent piracy, is prima facie reasonable, i.e., is rebuttably presumed reasonable.[294] On the other hand, a notice intended to undo or supersede the provisions of section 1012(b)-(f), such as a notice purporting to prohibit debugging, reverse engineering, or fair use, is prima facie unreasonable.[295]

4. Adequacy Of Notice

Subsection (e) describes how to provide notice adequate for the purposes of this section. A customer must be given "full, unambiguous, written notice of the restriction prior to the distribution of the product to the customer." Ordinarily, a label serves this purpose; in some circumstances, an owner of rights may prefer to use a letter. If indirect customers are to be charged with a restrictive notice, the notice must be provided before the product enters channels of trade. Thus, an owner of rights would need to give such "notice to the customer's predecessors, if any, in title to the product prior to the distribution of the product to them." It would be

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[294] *See* 17 U.S.C. § 109(b)(1)(A) (1994) (amendment limiting copyright law's first sale rule in regard to software rentals, adopted to prevent piracy masquerading in the guise of rentals).

[295] *See* Vault Corp. v. Quaid Software, 847 F.2d 255, 9 U.S.P.Q.2d (BNA) 1281 (5th Cir. 1988) (shrink-wrap computer program licenses impermissible where they conflict with user rights specified under copyright law).

limitation or restriction that section 1015 permits.[297] That is necessary to effectuate uniform federal regulation of this aspect of commercialization of software technology.

Second, a licensee's or customer's disobedience of a limitation or restriction that is *not* reasonable—or that is sought to be imposed on customers by a notice that is not adequate under subsection (e)—is not actionable under this or any other law. Since this federal statute would fully occupy and uniformly regulate the field, owners of rights under the Act must comply with the requirements of section 1015 if their restrictions are to be enforced; if they do not comply, there should be no enforcement. In effect, section 1015 is antagonistic to non-qualifying restrictions, and authorizes customers to disregard them. It follows that customers disobeying an unreasonable or inadequately noticed limitation or restriction

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[297] Otherwise, state antitrust laws, for example, might prohibit restrictions that the proposed legislation authorizes, and punish owners of rights under the Act for imposing them. State law should not impose liability for something that federal law authorizes. *Bonito Boats*, 489 U.S. at 141, 9 U.S.P.Q.2d (BNA) at 1847. Furthermore, section 1015 would supersede federal antitrust law to the extent, if any, that the latter prohibited rights owners from imposing reasonable restrictions. After the *Sylvania* decision, however, it is doubtful that any reasonable limitation or restriction would be held to violate the antitrust laws. Continental T.V., Inc. v. GTE Sylvania, Inc., 433 U.S. 36 (1977).

Immunization of licensees and customers, as well as rights owners, is desirable to effectuate the proposed legislation. The Supreme Court has rejected the contention that a patentee can act unilaterally in imposing price and customer license restrictions, so that no conspiracy or combination in restraint of trade exists. United States v. Bausch & Lomb Optical Co., 321 U.S. 707 (1944). The Court said, "Whether this conspiracy and combination was achieved by agreement or by acquiescence of the wholesalers coupled with assistance in effectuating its purpose is immaterial." *Id.* at 723. *See also* United States v. Paramount Pictures, Inc., 334 U.S. 131, 161 (1948) (not a defense that large customers "fathered the illegal practices and forced them onto the defendants" because "acquiescence in an illegal scheme is as much a violation of the Sherman Act as the creation and promotion of one").

It would be inconsistent with the logic of the proposed legislation to immunize rights owners and yet hold their licensees and customers liable for acquiescing in the rights owner's immunized conduct. Hence, proposed subsection (f) extends the immunity to all of the parties involved in the immunized agreements.

It may be that it is not possible to have just a little bit of preemption, once a law embarks on any substantial preemption, and that the need for uniform regulation of the field compels a widening gyre of ancillary commercial law measures. It may be, therefore, that it is necessary to add a provision something like section 301 of the National Labor and Management Act,[299] under which the federal courts are directed to devise and apply a federal common law of contracts applicable to employment contracts in or affecting commerce.

A final question is whether proposed section 1015 should have the effect of superseding or preempting other law, such as state and federal antitrust laws or unfair and deceptive trade practices laws, regarding the conduct of an owner of rights under the Act if the owner's restriction is unreasonable or inadequately noticed. There would appear to be no sound basis to supersede or preempt other laws where limitations and restrictions do not qualify for recognition under section 1015. To be sure, it may be argued that reasonableness of restrictions may not be as clearly discernible as suggested here, and that rights owners therefore need some leeway or breathing room. In this view, they should be protected from adverse legal consequences of their possible accidental missteps.

Yet, section 1015 provides no positive sanction against unreasonable or inadequately noticed restrictions. The Act simply fails to make such restrictions enforceable by way of an infringement action under the Act, and leaves the exhaustion doctrine (section 1012(a)) fully operative against them. To preempt state law and supersede federal law, in such circumstances, would be to require that non-qualifying restrictions go unregulated by any law, which would be irrational. As things stand, other state or federal laws may or may not punish non-qualifying restrictions, in accordance with whatever policy those laws embody.[300] That is something better left to the

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[299] 29 U.S.C. § 301 (1994).

[300] If an unreasonable restriction has a substantial adverse effect on competition, federal and state antitrust law may make the responsible persons liable for consequential harm. *See* Clayton Act § 4, 15 U.S.C. § 15 (1994) (treble damage liability for business and property damage caused by antitrust violations); *see also* United States v. Glaxo Group Ltd., 410 U.S. 52 (1973) (government injunctive action against patentees imposing unreasonable restrictions). An inadequately noticed restriction, if sought to be enforced, could be held violative of federal laws against unfair and

fragmented, in terms of what are infringing acts. Infringement is different for patented products and patented processes.[304]

Therefore, one may question whether a single concept of infringement can successfully be applied to algorithms, computer programming languages, and computerized methods of doing business—not to mention whatever other software abstraction may next come down the information highway and demand intellectual property protection. It is believed that, for two reasons, the concept of infringement developed here for rights in software abstractions is not doomed either to fail completely or else devolve to the amorphous, barely communicable standard of "I know it when I see it."

First, the proposed statute's two primitive concepts of "use" and "traffic"—given open-ended definitions by non-exhaustive exemplification—have sufficient flexibility to cover a very broad sweep of possible acts and conduct. It is unlikely that one could transgress on the rights of an owner of rights in a software abstraction without using or trafficking in the protected subject matter.

Second, the statutory expedient of allowing courts to add additional forms of use, traffic, and limitation, if they are *ejusdem generis* with those already stated in the proposed legislation and also are necessary to effectuate the statute's stated purposes, permits the legislative scheme to adapt to whatever other software abstraction may next come down the information highway and demand intellectual property protection, and do

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[304] Moreover, Congress recently enacted an amendment to the patent law, creating a new form of patent infringement applicable only to biotechnology products. This provision will make it possible to bar from importation, use, or sale a product made by means of a biotechnological material patented in the United States. Pub. L. 104–41, 109 Stat. 351 (Nov. 1, 1995); *see* 49 Pat. Trademark & Copyright J. (BNA) 649 (Mar. 30, 1995).

An effort in the previous Congress to enact similar legislation applicable to all products, H.R. 4307, 103d Cong., 2d Sess. (1994), rather than only to biotechnological material, failed because of opposition from the electronics industry, chemical industry, and other non-biotech manufacturers, which believed that the legislation was not suited to and would harm their industries. *See* 48 Pat. Trademark & Copyright J. (BNA) 29 (May. 12, 1994).

but not to other software abstractions, might aid in maintaining a single legal rights system for all software abstractions. Using that expedient would diffuse perception of need to devise separate systems for each new kind of software abstraction that becomes important. For these reasons, one may be optimistic about being able to maintain a single concept of infringement for different kinds of software abstraction.

Can such a concept of infringement be generalized more broadly to other new technologies, or to the subject matter of intellectual property in general? It is believed that the answer is no, and that it is not possible to develop a general theory of infringement of intellectual property rights. The reason is that the interests[311] protected under the different kinds of laws termed "intellectual property" are too disparate.[312]

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[311] Copyright and patent law protect different interests; they often march to different drummers. Moreover, both of them protect interests quite different from those that trademark law protects. Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 439 n.19, 220 U.S.P.Q. (BNA) 665, 677 n.19 (1984).

For example, copyright law frequently impacts interests protected by the First Amendment, Harper & Row Pub., Inc. v. National Enterprises, 471 U.S. 539, 555–60, 225 U.S.P.Q. (BNA) 1073, 1079–81 (1985), but patent law seldom or perhaps never does. Copyright law involves personal self-expression as a value to be protected, which is one reason why it, unlike patent law, permits independent creation, *supra* note 64, to be a defense. Copyright law considers artistic integrity issues, *see* 17 U.S.C. § 106A (1994), but patent law has no significant comparable interest. Copyright law considers economic interests also, but they tend to dominate patent law completely. Promoting disclosure of technical advances is a principal interest of patent law, *see* Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 157, 9 U.S.P.Q.2d (BNA) 1847, 1854 (1989); Pennock v. Dialogue, 27 U.S. (2 Pet.) 1, 19 (1829) ("main object"); but it is unclear to what extent, if any, this is a copyright policy. *See* Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 429, 220 U.S.P.Q. (BNA) 665, 672 (1984).

[312] Indeed, this may be so even within copyright law, which by now may well have reached the end of its rope. Sections 107–120 have carved so much out of sections 106–106A, and in so many different work-specific ways, that sections 106–106A hardly define a unitary concept of rights and infringement any longer. *See* 17 U.S.C. §§ 106–120 (1994). (For example, violation of artistic integrity under section 106A does not rely on the substantial similarity test.) It is not plausible that an infringement system already stretched this thin could be combined further with infringement

Infringement and authorization are two sides of a coin. A special kind of non-authorization, and thus infringement, is described. It is proposed to permit owners of software abstraction rights to impose reasonable use restrictions on customers. When the rights owner gives adequate and reasonable notice, customers' use in violation of the notice is unauthorized and thus an infringement. The notice provisions must wholly occupy the field to accomplish the statutory purpose in authorizing them, and therefore largely supersede and preempt other regulation.

Finally, it is concluded that it is possible to develop a unitary concept of infringement for all software abstractions, because the proposed system uses the methodology of general enumeration of rights and selective carve-out of subject matter-specific exceptions. Extension of this approach more broadly to other intellectual property rights, however, is considered infeasible because the interests to be protected under different schemes are too disparate.

APPENDIX—OVERVIEW OF PETTY PATENT PROPOSAL

A petty patent system for algorithms and other software abstractions is proposed as a compromise to restore predictability to computer-related patent law and as a way to permit software innovators to obtain rapid, inexpensive intellectual property protection that would not preempt the innovative activity of others in the field. The subject matter of the petty patent system is algorithms and other computer-related advances that are rejected under section 101 of the patent statute as directed to nonstatutory subject matter. The same system may, however, appropriately include software abstractions or "nonliteral aspects" of computer programs that courts similarly deem unprotected under the copyright statute.

An important feature of the system is a predictable, relatively bright-line means of distinguishing claims to algorithms, as such, from claims to algorithm-using machines and algorithm-using industrial processes. The distinction must be made under any system regulating this field, for clearly it has never been a bar to patentability of a technological advance that it operates in accordance with a rational, definable scientific principle.[314] The problem with the present system, particularly after recent patentability decisions, is lack of predictability and clarity, with consequent impairment

[314] Diamond v. Diehr, 450 U.S. 175, 209 U.S.P.Q. (BNA) 1 (1981).

PTO Commissioner to issue regulations to fill definitively any interstices that may exist or develop.[316]

The PTO would issue these petty patents with only negligible prior examination, which would be limited to facial compliance with statutory requirements and implementing regulations, as in the case of copyright and chip layout registrations. Therefore, petty patents would have only a slight presumption of validity. Issues of novelty and technical advance over the prior work of others in the field[317] would be addressed in detail only when an infringement dispute or similar controversy arose.

The preferred method of resolving a controversy over novelty and technical advance of a software abstraction would be a adversary, post-issuance opposition or revocation proceeding in the PTO,[318] rather than a determination in a district court as in patent, copyright, and chip layout

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[316] *See id.* at 224:

> (c) . . . (2) The Commissioner is authorized to effectuate this section and particularize it as to technical details by promulgating regulations exclusively allocating specified subject matter to protection under this part of this title; and specifying the form, interpretation, and manner of examination of claims directed to such subject matter. Such regulations shall have the force of law. . . .

[317] The proposed system would make entitlement to a petty patent dependent on novelty and technical advance. The required standard of technical advance would not be as high as the nonobviousness standard of regular patent law. 35 U.S.C. § 103 (1994); *see Algorithm Conundrum, supra* note 4, at 219–21.

[318] It is not proposed at this time to eliminate district court determination of other, factual issues in infringement litigation, such as whether the defendant's conduct infringed the plaintiff's rights. Nevertheless, expert determination of such factual infringement issues, by a master or the PTO as a master, may well be preferable. Thus, the *Altai* decision points the way toward increased court use of technical experts in computer program copyright infringement cases, both in regard to validity and infringement issues. *See* Computer Assocs., Int'l, v. Altai, Inc., 982 F.2d 693, 23 U.S.P.Q.2d (BNA) 1241 (2d Cir. 1992).

made,[321] and injunctions would be available only in exceptional circumstances.

[321] *See* 28 U.S.C. § 1498 (1994) (providing for award of reasonable and entire compensation, and permitting no other remedy, when United States infringes intellectual property rights).

The remedy mechanism should consider factors that are material in the software abstraction context, even though regular patent law does not address them. For example, compensation for competitive use of a software abstraction might take into account such possible facts as that the defendant's infringing computer program is a substantial enhancement over the plaintiff's contribution to the art; that the defendant engaged in substantial independent work to implement or commercialize the protected subject matter; that the defendant independently created the infringing subject matter and did not copy from the registrant; that the defendant in good faith, prior to the plaintiff's effective date of registration, and without derivation from the plaintiff, exploited the protected subject matter; whether the amount of technical advance in the art or technical merit of the protected subject matter was modest or substantial; whether industry compatibility requirements made it commercially impracticable not to use the protected subject matter; and that the plaintiff made excessive demands for compensation or excessive claims as to the scope of its rights. A court or other tribunal awarding compensation might be permitted to decrease a plaintiff's compensation award because of its unreasonable behavior and the defendant's reasonable behavior, or increase a plaintiff's compensation award because of the defendant's unreasonable behavior and the plaintiff's reasonable behavior.

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COMPUTER SOFTWARE AS PATENTABLE SUBJECT MATTER: CONTRASTING UNITED STATES, JAPANESE, AND EUROPEAN LAWS

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I. INTRODUCTION AND TERMINOLOGY

A. *The Need To Determine If Computer Software Qualifies For Patent Protection*

The statutory language used to define patentable subject matter in the United States has not changed significantly since it was first developed over 200 years ago.[1] Consequently, once technology expands into formerly unimaginable domain, intellectual property laws must similarly adjust in order to either provide or preempt protection. However, where law-making bodies do not act, courts and administrative agencies, such as the Patent and Trademark Office, are left with the difficult task of applying antiquated laws to new technologies. Often, this procedure is analogous to fitting a square peg into a round hole.

One area in which courts have been faced with unforeseen scientific advances is in the field of computer-related inventions.[2] Currently, most countries provide copyright and/or design protection for computer programs.[3] Yet, as the computer industry continues to flourish, the demand for patent protection has increased worldwide.[4] Accordingly, the recent trend has been toward providing patent protection to computer-

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[1] "The terms used in [35 U.S.C.] § 101 have been used for over two hundred years—since the beginnings of American patent law—to define the extent of the subject matter of patentable invention." *In re* Alappat, 33 F.3d 1526, 1552, 31 U.S.P.Q.2d (BNA) 1545, 1564 (Fed. Cir. 1994).

[2] "The exceptions to patentable subject matter derive from a lengthy jurisprudence, but their meaning was probed anew with the advent of computer-related inventions." Arrhythmia Research Technology, Inc. v. Corazonix Corp., 958 F.2d 1053, 1056, 22 U.S.P.Q.2d (BNA) 1033, 1035 (Fed. Cir. 1992).

[3] 1 PAUL E. GELLER, INTERNATIONAL COPYRIGHT LAW AND PRACTICE § 4[1](c)[i][B] (1995).

[4] "While computer software can be protected by the [sic] Copyright Law, the demand for protection of computer software under the patent system is increasing worldwide." Yoshikazu Tani, *Special Problems of Certain Technologies: Computer Software-Related Inventions*, JAPANESE PATENT PRACTICE PROSECUTION/LICENSING/LITIGATION 113 (AIPLA, 1994) (further noting that copyright protection only extends to expression, whereas patent protection encompasses the idea behind the software).

implicate any physical structure. Of course, software is useless in and of itself, and is only able to function when implemented by a computer.[9]

II. SCOPE OF PATENT PROTECTION FOR COMPUTER TECHNOLOGY

With a growing body of case law and a recent administrative proposal of additional guidelines, the United States is the global leader when it comes to exploring the patentability of computer software. Nevertheless, the extent to which computer programs are, and should be, protected is far from being resolved either in the United States or abroad.

In Japan and Europe, for example, guidelines have been created which attempt to harmonize the domestic laws of Japan and Europe with those of the United States. These guidelines not only encompass case law, but have resulted in the articulation of newly exacting bright line rules. For its part, the United States has also implemented guidelines which essentially provide comparable protection in many areas of computer-related inventions.

A. *United States*

1. United States Code As A Starting Point: 35 U.S.C. § 101

United States patent law recognizes four categories of patentable subject matter: process, machine, manufacture, and composition of matter.[10] Thus, for an invention to be patentable, it must fall within one of these four identified categories.

As will be discussed, computer software in and of itself does not squarely fit into any of the enumerated categories. Nonetheless, in certain circumstances, the courts have been willing to extend protection to software. In light of the difficulties encountered by courts addressing the patentability of computer-related technologies, the U.S. Patent and Trademark Office

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[9] *See* David L. Stewart, *Patenting of Software—Proposed Guidelines and the Magic Dividing Line that Disappeared*, 77 J. PAT. & TRADEMARK OFF. SOC'Y 681, 683 (1995).

[10] 35 U.S.C. § 101 (1994).

Benson and *Flook* were the first Supreme Court cases to address the patentability of computer-related technology.[18] In each case, method claims implemented by a computer were considered to be algorithms that solve mathematical problems,[19] and were held to be nonstatutory subject matter.[20] Notably, while neither *Benson* nor *Flook* precluded the patentability of computer software,[21] the algorithms were necessarily implemented by

[18] *Diehr*, 450 U.S. at 194-95, 209 U.S.P.Q. (BNA) at 11 ("It was 1968 before the federal courts squarely addressed the subject, and 1972 [in *Benson*] before this Court announced its first decision in the area.") (Stevens, J., dissenting) (citations omitted).

[19] *Gottschalk v. Benson*, 409 U.S. 63, 65, 175 U.S.P.Q. (BNA) 673, 674 (1972). The Court defined an algorithm as a "procedure for solving a given type of mathematical problem." *Id.* In *Benson*, the particular mathematical problem was converting binary-coded decimal numerals into pure binary numerals. In *Flook*, the invention was a method for updating alarm limits according to a particular equation. *Flook*, 437 U.S. at 585, 198 U.S.P.Q. (BNA) at 195.

[20] "The algorithm was not a *process* that could be patented under the Patent Act." *Benson*, 409 U.S. at 71-72, 175 U.S.P.Q. (BNA) at 676 (1972). *See also Diehr*, 450 U.S. 175, 186, 209 U.S.P.Q. (BNA) 1, 8 (noting that an "algorithm, or mathematical formula, is like a law of nature, which cannot be the subject of a patent"); *Benson*, 409 U.S. 63, 175 U.S.P.Q. (BNA) 673, *construed in Flook*, 437 U.S. at 589, 198 U.S.P.Q. (BNA) at 197 (discovery of a novel and useful mathematical formula may not be patented).

[21] *Benson*, 409 U.S. at 71, 175 U.S.P.Q. (BNA) at 676 ("It is said that the decision precludes a patent for any program servicing a computer. We do not so hold."); *Flook*, 437 U.S. at 595, 198 U.S.P.Q. (BNA) at 199 ("the dearth of precedent, nor this decision, should therefore be interpreted as reflecting a judgment that patent protection of certain novel and useful computer programs will not promote the progress of science and the useful arts, or that such protection is undesirable as a matter of policy"); *see also* Fred E. McKelvey, *Patentable Subject Matter*, 1122 Official Gazette Pat. 1444 (1991) (noting that the "Supreme Court has not ruled on whether computer processes are *per se* statutory or nonstatutory").

"highly abstract."[27] Yet, what *is* clear about the Supreme Court decisions is that patent protection is *not* to be presumptively denied for computer programs.[28] In addition, any patentable subject matter rests in the structure or process of the invention, and not in the nature, natural phenomena, abstract idea, or scientific principle associated with the invention.[29] These basic notions, which form the essence of the patentability analysis for computer software, are found throughout later Federal Circuit decisions.

3. The Freeman-Walter-Abele Test

The *Benson*, *Flook*, and *Diehr* Supreme Court decisions led to the development of the two-part *Freeman-Walter-Abele* test ("*Freeman* test").[30] In

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[27] Lance L. Vietzke, *Software Patent Protection: A Problem-Solution Theory for Harmonizing the Precedent*, 12 COMPUTER/L.J. 25, 50 (1993) (declaring that only highly abstract and non-specific claimed algorithms are nonstatutory and that nearly all software programs are a solution to a specific problem).

[28] *Accord In re* Bradley, 600 F.2d 807, 810-11, 202 U.S.P.Q. (BNA) 480, 485 (C.C.P.A. 1979), *aff'd without opinion*, 450 U.S. 381 (1981) (reasoning that "[s]ince digital computers normally operate in some numerical radix, binary, binary coded decimal, or the like, we consider the operation of [applicant's] claimed invention to be mathematical" and holding that "any computer-related invention must be regarded as mathematical in nature, a conclusion which is not compelled by either *Benson* or *Flook*"); *In re* Gelnovatch, 595 F.2d 32, 37, 201 U.S.P.Q. (BNA) 136, 141 (C.C.P.A. 1979) (arguing that "[t]o the extent [the board holds] . . . that appellants' method is implemented by a computer, that computers are operated by programs, and that programs are nonstatutory under *Benson* . . . and *Flook* . . . we find this basis unsupported by legal precedent").

[29] *See, e.g.*, Mackay Co. v. Radio Corp., 306 U.S. 86, 94 (1938), *quoted in Benson*, 409 U.S. at 67, 175 U.S.P.Q. (BNA) at 675 ("While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be."); Funk Bros. Seed Co. v. Kalo Co., 333 U.S. 127, 130 (1948), *quoted in Benson*, 409 U.S. at 67, 175 U.S.P.Q. (BNA) at 675 ("He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.").

[30] *In re* Freeman, 573 F.2d 1237, 197 U.S.P.Q. (BNA) 464 (C.C.P.A. 1978); *In re* Walter, 618 F.2d 758, 205 U.S.P.Q. (BNA) 397 (C.C.P.A. 1980); *In re* Abele, 684 F.2d 902, 214 U.S.P.Q. (BNA) 682 (C.C.P.A. 1982). The first step

embraces a mathematical algorithm,[34] thereby making computer software necessarily subject to the *Freeman* test. The courts, however, should not lose sight of the test for abstract ideas or scientific principles as articulated in the *Benson, Flook and Diehr* decisions by giving undue presumptive application to the *Freeman* test. Fortunately, there is some indication that the Federal Circuit is moving away from the *Freeman* test.[35] Moreover, the *Freeman* test has been significantly curtailed under the PTO Guidelines.[36]

4. Federal Circuit Decisions

With the advent of the modern digital computer, there have been an increasing number of cases dealing with the patentability of computer technology. In *Alappat*,[37] the Federal Circuit, sitting en banc, considered the *Diehr, Flook,* and *Benson* decisions and the resulting *Freeman* analysis.

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[34] "[A] modern digital computer manipulates data, usually in binary form, *by performing mathematical operations*, such as addition, subtraction, multiplication, division, or bit shifting, on the data." *In re* Trovato, 42 F.3d at 1383, 33 U.S.P.Q.2d (BNA) at 1199 (quoting *In re* Bradley, 600 F.2d 807, 811-12, 202 U.S.P.Q. (BNA) 480, 485 (C.C.P.A. 1979) (emphasis added)). *But see supra* note 28.

[35] STOBBS, *supra* note 13, § 9.42. For instance, the Federal Circuit, sitting en banc in *Alappat*, did not apply the *Freeman* test. *See infra* notes 39-46 and accompanying text. Yet, unless the test is specifically overruled, the courts are likely to apply it to safeguard their decisions. Arrhythmia Research Technology, Inc. v. Corazonix Corp., 958 F.2d 1053, 1058, 22 U.S.P.Q.2d (BNA) 1033, 1037 (Fed. Cir. 1992) ("Although the [*Freeman*] analysis is not the only test for statutory subject matter, and this court has stated that failure to meet that test may not always defeat the claim, this analytic procedure is conveniently applied to the [present] invention." (citations omitted)).

[36] "The Freeman-Walter-Abele test, while of limited value, may still be relied upon in analyzing claims directed solely to a process for solving a mathematical algorithm." *Legal Analysis to Support Proposed Examination Guidelines for Computer-Implemented Inventions*, 50 Pat. Trademark & Copyright J. (BNA) 659 (Oct. 5, 1995) (footnote omitted) [hereinafter *Legal Analysis*].

[37] *In re* Alappat, 33 F.3d 1526, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994) (en banc).

elements, that combination constitutes a machine when claimed[44] as a device.[45]

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[44] The holding in *Alappat* was based upon the scope of the claimed invention. Judge Archer, in a dissenting opinion, criticized the majority for applying a "simplistic approach of looking *only* to whether the claim reads on structure and *ignoring* the claimed invention or discovery for which a patent is sought." *Id.* at 1554, 31 U.S.P.Q.2d (BNA) at 1566 (Archer, J., dissenting). Hence, under the majority opinion, a section 101 rejection does not denounce the entire disclosure, only the particular claims sought to be patented.

Judge Archer would apply a section 101 analysis by looking to the specification for the true invention.

> "[T]he dispositive issue is not whether the claim recites on its face something more physical than just abstract mathematics. If it were, *Benson* and *Flook* would have come out the other way and *Diehr* would have been a very short opinion. The dispositive issue is whether the invention or discovery *for* which an award of patent is sought is more than just a discovery in abstract mathematics."

Id. at 1557, 31 U.S.P.Q.2d (BNA) at 1569 (Archer, J., dissenting) (emphasis in the original).

Judge Archer's view would seem to be the better approach. Concededly, the majority approach is analogous to other types of rejections, such as a section 103 obvious-type rejection, which does not render the entire disclosure obvious, only the protection sought by the claims. However, section 103 specifically applies to "the subject matter sought to be patented," 35 U.S.C. § 103 (1994), whereas section 101 is not so limited. To the contrary, section 101 applies to "[w]hoever invents or discovers *any* new and useful process, [or] machine." *Id.* § 101 (emphasis added). By looking only to the claims, the court does not test for a discovery or invention, as arguably required by Supreme Court precedent and the patent statute.

[45] Diamond v. Diehr, 450 U.S. 175, 200, 209 U.S.P.Q.2d (BNA) 1, 14 (1981) (Stevens, J., dissenting) ("Therefore, patent protection could be obtained for new computer programs if the patent claims were drafted in apparatus form."). The fact that "claim 15 would read on a general purpose computer programmed to carry out the claimed invention" did not render the claim nonstatutory. *In re* Alappat, 33 F.3d at 1545, 31 U.S.P.Q.2d (BNA) at 1558. Rather, "such programming creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is

Warmerdam also rejected a dependent claim[50] to a "data structure."[51] In so doing, *Warmerdam* implies that the mere recitation of a physical element is not sufficient verification that an invention is something other than "abstract," suggesting that an invention must include a minimum threshold level of physical elements.[52]

Fifteen days after *Warmerdam*, in *Lowry*,[53] the Federal Circuit found statutory subject matter in an invention for processing data in a computer. The preamble recited a memory, while the extensive body of the claim was directed to a "data structure."[54] Without relying on any software case law,[55] *Lowry* held that the applicant did not merely claim the information content of a memory. Rather, "the claims require specific electronic structural

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[50] *Id.* at 1358, 31 U.S.P.Q.2d (BNA) at 1757 (rejecting claim 6 which reads: "A data structure generated by the method of any of Claims 1 through 4").

[51] The court held claim 6 to be nonstatutory "[s]ince the 'data structure'. . . is nothing more than another way of describing the manipulation of ideas." *Id.* at 1362, 31 U.S.P.Q.2d (BNA) at 1760.

[52] The court explained that a data structure is "a physical *or* logical relationship among data elements, designed to support specific data manipulation functions." *Id.* (quoting INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS, STANDARD COMPUTER DICTIONARY (1991)). The panel in Trovato explained that "[this] express language implies a physical arrangement of a computer's memory contents *only in the alternative*." *In re* Trovato, 42 F.3d at 1381, 33 U.S.P.Q.2d (BNA) at 1197 (emphasis added). Arguably then, the court did not consider a data structure to be a physical element. Yet, claim 6 was drawn to a data structure, not a method. In addition, *Warmerdam* distinguished claim 6 from the "data structure" that was found to be statutory in *In re* Bradley, 600 F.2d 807, 202 U.S.P.Q. (BNA) 480 (C.C.P.A. 1979). In *Bradley*, the data structure "was a physical, interconnected arrangement of hardware and thus embraced by the term 'machine.'" *In re* Warmerdam, 33 F.3d at 1362, 31 U.S.P.Q.2d (BNA) at 1760. *Warmerdam*, on the other hand, held that claim 6 "does not imply a physical arrangement of the contents of a memory," despite the fact that the data structure was claimed as a device, and not a method. *Id.*

[53] *In re* Lowry, 32 F.3d 1579, 32 U.S.P.Q.2d (BNA) 1031 (Fed. Cir. 1994).

[54] *Id.* at 1581, 32 U.S.P.Q.2d (BNA) at 1033.

[55] *Lowry* does not significantly discuss the *Freeman* test, the Supreme Court cases, or even *Alappat*.

Pursuant to this notion, even though the program is not a machine in itself, it takes on that embodiment when combined with a machine. Taken literally, every program stored by a computer, and claimed as a device, is per se statutory subject matter.[60]

The Federal Circuit again addressed computer software as statutory subject matter in *Trovato*.[61] In addressing the process claims, the court first noted that *Diehr* found statutory material in a process claim which was "an *application* of a law or nature or mathematical formula to a known structure or process."[62] Nevertheless, *Trovato* held the process claims nonstatutory since the specification lacked evidence of specific physical application.[63]

However, examination for physical application is only half the test; *Diehr* specifically provides that a structure *or* process application justifies

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[60] This proposition, however, does not fully square with *In re* Warmerdam, where the invention was held nonstatutory despite a claim to the physical element of "data structure." *In re* Warmerdam, 33 F.3d 1354, 31 U.S.P.Q.2d 1754 (Fed. Cir. 1994). That is, the *Warmerdam* process would convert the "data structure" into a new machine. One explanation may be that *Warmerdam* imposes a threshold level of abstraction at which computer elements transform a process into a "machine." Thus, given that a process does result in a different machine, it still must be more than a mere "abstract idea." *See supra* note 52 and accompanying text.

[61] *In re* Trovato, 42 F.3d 1376, 33 U.S.P.Q.2d 1194 (Fed. Cir. 1994), *vacated, opinion withdrawn*, 60 F.3d 807, 35 U.S.P.Q.2d (BNA) 1570 (Fed. Cir. 1995) (en banc). It is interesting to note that the three-judge panel in *Trovato* consisted of one judge that dissented in the *Alappat* decision (Judge Nies, who wrote *Trovato*), and one that took no position (Judge Schall).

[62] *Id.* at 1380, 33 U.S.P.Q.2d (BNA) at 1197.

[63] *Id.* The court further noted that "[u]nlike the invention claimed in *Diehr*, the specifications involved here provide no grasp of any underlying physical process. Although cursory references to such diverse apparatus as robots, dynamic emergency exit routes and electronic maps are present, no computer architecture is provided, no circuit diagram is revealed, and no hardware at all receives more than a brief mention." *Id.*

Without opinion, the Federal Circuit, sitting en banc, vacated the *Trovato* panel decision for reconsideration in light of *Alappat* and any guidelines adopted by the Patent and Trademark Office.[67]

5. Case Law Analysis

An invention is not statutory if it is no more than an abstract idea, law of nature, scientific principle, or mathematical algorithm.[68] In light of these exceptions, the intangible nature of software and its interaction with mathematical formulas has courts hesitant to accord patent protection to software.

Under a plain meaning analysis, computer software would seem to fall under the statutory category of a process.[69] Nonetheless, courts have required process claims to include an apparatus. If an apparatus is not claimed, then there must be a transformation or reduction of subject matter from one state to another.[70]

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[67] *In re* Trovato, 60 F.3d 807, 35 U.S.P.Q.2d (BNA) 1570 (Fed. Cir. 1995) (en banc).

[68] *In re* Alappat, 33 F.3d 1526, 1543, 31 U.S.P.Q.2d (BNA) 1545, 1556-57 (Fed. Cir. 1994) ("[C]ertain types of mathematical subject matter, standing alone, represent nothing more than *abstract ideas* until reduced to some type of practical application, and thus that subject matter is not, in and of itself, entitled to patent protection.")

[69] 35 U.S.C. § 100(b) (1994) defines a process as a "process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." This definition is in accord, if not identical, with the meaning of software. As noted previously, software is merely a set of instructions used in a computer to obtain a particular result. *See supra* note 9.

[70] Diamond v. Diehr, 450 U.S. 175, 183, 209 U.S.P.Q. (BNA) 1, 6 (1981) ("A process is . . . a mode of treatment of certain materials to produce a given result. It is an act, or series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing."); Gottschalk v. Benson, 409 U.S. 63, 70, 175 U.S.P.Q. (BNA) 673, 676 (1972) ("Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." (citing Cochrane v. Deener, 94 U.S. 780, 787-88 (1876))). *See also* Richard H. Stern, *Solving the Algorithm Conundrum: After 1994 in the Federal Circuit Patent Law Needs a Radical Algorithmectomy*, 22

The rationale for examining inventions for physical application is that it necessarily presupposes that the invention is not abstract. On the other hand, one who has an abstract idea lacks the particularity to create a physical device. Hence, in the absence of physical structure, a process is merely a nonstatutory abstract idea lacking concrete application.[74]

Accordingly, a simple situation is one in which an invention claims a specific physical embodiment. However, the more the physical application of an invention is diminished, the more difficult the test is to apply; the presence of a mathematical algorithm only serves to further complicate the analysis.[75]

Thus, the courts have moved in a direction whereby software inventions, whether claimed as a device or as a process, are examined for physical application.[76] Indeed, the cases suggest that, not only must a

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[74] Thus, where there are sufficient tangible elements, an invention is not an abstract idea. *See*, e.g., *In re* Iwahashi, 888 F.2d 1370, 1375, 12 U.S.P.Q.2d 1908, 1911 (Fed. Cir. 1989) (holding statutory an invention claimed "as apparatus with specific structural limitations"); *cf.* STOBBS, *supra* note 13, § 9.31 (noting that, in *Diehr*, the patentable invention worked a change on a mold, which is a physical object, yet, in *Flook*, the nonstatutory invention was one that changed a number, which is not a tangible element).

[75] "The Supreme Court's use of such varying language as 'algorithm,' 'formula,' and 'equation' merely illustrates the understandable struggle that the Court was having in articulating a rule for mathematical subject matter, given the esoteric nature of such subject matter and the various definitions that are attributed to such terms . . . and not an attempt to create a broad fourth category of excluded subject matter."

In re Alappat, 33 F.3d 1526, 1543 n.20, 31 U.S.P.Q.2d (BNA) 1545, 1557 n.20 (Fed. Cir. 1994); *In re* Trovato, 42 F.3d at 1381, 33 U.S.P.Q.2d at 1998 ("Citing the difficulties in determining the proper boundaries of the nonstatutory category of mathematical algorithms, *Warmerdam* did not proceed by employing the latter term.").

[76] *Diamond v. Diehr*, 450 U.S. 175, 197, 209 U.S.P.Q. (BNA) 1, 12 (1981) (Stevens, J., dissenting) ("[T]he definition of 'process' announced by this Court . . . seemed to indicate that a patentable process must cause a physical transformation in the materials to which the process is applied.") (citation omitted); *In re* Schrader, 22 F.3d 290, 294, 30 U.S.P.Q.2d (BNA)

nonstatutory; the presence or absence of *physical application* hardly justifies holding that a *process* is an abstract idea.[79]

First, it is the process that renders the machine different, not the conventional use of ordinary physical elements.[80] Without software, a computer would have no utility. While the courts have been quite willing to patent "invisible" physical changes to common elements used to perform their conventional functions,[81] quite inexplicably, they are quite hostile to the underlying process which renders the invisible change.[82]

Second, the nature of software demands distinct treatment. Software is described inherently as a process and is dependent upon only a limited range of physical elements for implementation. Granted, the relation between software and math is inordinately intimate. Yet, this is not to say that software always uses mathematical algorithms in a manner that directly deals with scientific principles or nature. Where software does not relate to a scientific principle, the mathematical algorithm itself would be part of the

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[79] Where an invention concerns a process, it hardly seems proper to test for a device. The reason for claiming an invention as a process in the first place is, theoretically at least, the fact that the inventive aspect lies in the process, not any device.

[80] It is not *how* the computer does what it does, but *what* the computer is doing that is critical. *In re* Gelnovatch, 595 F.2d 32, 37, 201 U.S.P.Q. (BNA) 136, 141 (C.C.P.A. 1979) ("While a program may configure a computer in a manner to carry out a process, it is the process, i.e., what the computer does, which is the subject of examination under 35 U.S.C. 101.").

[81] *See supra* note 45 and accompanying text.

[82] Courts have sometimes considered software processes to result in a "machine" since the device now is a different device. *See supra* note 59 and accompanying text. This logic, however, is only noted after a particular invention has already been held non-abstract. In *Warmerdam*, on the other hand, software was used to control the motion of a robot in order to avoid physical objects. *In re* Warmerdam, 33 F.3d 1354, 31 U.S.P.Q.2d (BNA) 1754 (Fed. Cir. 1994). Thus, the method was actually being applied to a concrete physical object, a robot. The method resulted in a new machine since the robot behaved differently once the software was installed. Yet, the court held both the process and data structure claims to be nonstatutory, without an examination of whether the presence of software transformed a general machine into a new machine.

application.[86] To riddle the claims with unnecessary "means" muddles the system and does not serve to limit the true invention. Accordingly, if a process surpasses a threshold level of definable operation, it will cease to function as an abstract idea.

In summation, software is *not* per se unpatentable subject matter. Instead, the courts have turned the issue into an examination of the relationship that the software must have with physical elements. It is apparent that the claimed invention must meet a threshold level of physical element interconnected with the program. Yet, the precise physical elements which are sufficient to render a program patentable have yet to be resolved.

Identifying the physical elements of an invention is one technique to test for an abstract idea. However, this technique alone should not preempt patentability. Rather, the presence or absence of physical elements should be only one factor of patentability. The overall software should be examined to determine whether the process itself is an abstract idea or a concrete application of an abstract idea. As stated in *Diehr*, an invention may be patentable if it is shown to have an application in a "known structure *or* process."[87] In addition, the use of a computer program does not render an

[86] For instance, word processing is an abstract idea which consists of using a computer to process human language. Yet, the particular features of WordPerfect® are far from conceptual. Rather, they are concrete applications of an abstract idea. The invention does not lie in any tangible element, but in the conceptual process.

[87] *See supra* note 64.

The PTO Guidelines qualify software for patent protection both as a machine and as a process. The first provision protects software when claimed as part of a computer. "If a claim defines a useful machine or manufacture by identifying the physical structure of the machine or manufacture in terms of its hardware and software combination, it defines a statutory product."[92] However, the patentability of software will be tested under the PTO Guidelines as a process.[93] A process, on the other hand, is patentable where there is a physical transformation outside the computer.[94] In this regard, the PTO Guidelines closely track existing case law. That is, a process has a safe harbor where there are independent physical acts, or where there is a manipulation of data representing physical objects.[95]

The PTO Guidelines further provide that a process is statutory, even in the absence of physical transformation outside the computer, where the claim is limited to a practical application within the technological arts.[96] Seemingly, the PTO Guidelines do not condition patentability of a process on physical transfiguration.[97] Hence, even internal operations of a computer are capable of comprising a patentable process, so long as the practical application is set forth in the claim.[98] Accordingly, a process will be statutory

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[92] PTO Guidelines, *supra* note 12, at 7,482. This provision is analogous to case law noting that a machine programmed in a new and nonobvious way is a physically different machine without that program. *See supra* note 59 and accompanying text.

[93] If the product claimed encompasses any and every machine for performing the underlying process, as opposed to being directed to a specific machine, the underlying process is to be evaluated. *Id.* at 7,483.

[94] *Id.*

[95] *Id.*

[96] *Id.*

[97] "[Physical transformation] is not determinative of whether the process is statutory because such transformation alone does not distinguish a statutory computer process from a non-statutory computer process. What is determinative is not how the computer performs the process, but what the computer does to achieve a practical application." *Id.* at 7,484.

[98] *Id.*

In short, the PTO Guidelines appear to parallel binding case law. Yet, the most difficult question remains to be settled: what constitutes a statutory practical application as opposed to a nonstatutory "abstract" idea?[105] Significantly, however, the PTO Guidelines at least opens for consideration the concept that an invention is not necessarily an "abstract idea" based solely on the absence of physical transformation. Although the courts may anxiously wait for Congress to dictate the law of software patentability, it would not be surprising for a court to think twice before entrusting the PTO with such decisions.[106]

B. *Japan*

1. Japanese Law

Much like the United States, Japanese patent law sets forth a broad concept as to what constitutes patentable subject matter. Specifically,

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abstract idea, a law of nature, or a natural phenomenon has proven to be challenging." *Legal Analysis, supra* note 36, at 661-62.

[105] Other than providing examples of inventions found to be abstract by the courts, the PTO provides but a single insight into the meaning of "abstract:" "[a]n 'abstract idea' may simply be *any* sequence of mathematical operations that are combined to solve a mathematical problem." *Legal Analysis, supra* note 36, at 666. This definition, however, is hardly a mandatory standard and is limited to software utilizing mathematical operations.

[106] "These Guidelines do not constitute substantive reulemaking and hence do not have the force and effect of law." PTO Guidelines, *supra* note 12, at 7,479; *see also State Street Bank*, 38 U.S.P.Q.2d at 1539. The Federal Circuit has given some indication that the PTO Proposed Guidelines are generally consistent with *In re* Alappat. *See In re* Trovato, 60 F.3d 807, 807, 35 U.S.P.Q.2d 1570, 1571 (Fed. Cir. 1996), *vacating*, 42 F.3d 1376, 33 U.S.P.Q.2d 1194 (Fed. Cir. 1995). Nevertheless, courts are not bound by the PTO Guidelines. Moreover, to the extent that they are inconsistent with binding precedent, the PTO Guidelines should be overruled. *Cf.* Gottschalk v. Benson, 409 U.S. 63, 73, 175 U.S.P.Q. 673, 677 (1972) ("If these programs are to be patentable, considerable problems are raised which only committees of Congress can manage, for broad powers of investigation are needed, including hearings which canvass the wide variety of views which those operating in this field entertain. The technological problems tendered in the many briefs before us indicate to us that considered action by the Congress is needed.") (footnotes omitted).

A "procedure" is "a sequence of processing steps or operations connected in time sequence to achieve a desired object."[113] Hence, if the invention is a "procedure," it need not recite a computer in order to be subject to the guidelines. Rather, the invention need only have processing steps *relating to* the operation of a computer for its implementation.

On the other hand, a "program" is defined as "a sequence of instructions which are suitable for a computer to perform a particular processing."[114] Thus, for software that is a program, the sequence of instructions must be both suitable for performance by a computer and relate to the operation of a computer for its implementation.

Hence, the JPO Guidelines apply to a wide variety of inventions, including both programs and procedures.[115] Accordingly, any invention disclosing a computer will likely be subject to analysis under the JPO Guidelines.

b. *Test for natural law*

Once an invention is determined to be a "software related invention," the claims[116] must meet the following criteria for patentability:

> If the claimed invention satisfies either condition (I) or (II) below, it is deemed that the invention utilizes natural laws,

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[113] *Id.*

[114] *Id.*

[115] *Id.* at 3. The JPO Guidelines further note that "[t]here are various kinds of software related inventions; some relate to an apparatus connected to a computer, or a controlling of a computer per se, and some related to a processing of non-physical information such as business transaction information." *Id.*

[116] "Patentability requirements are applied to 'claimed inventions.' In examining the requirements for patentability, attention should be given to the inventions based on the claims, rather than specific means described in the description of the invention." *Id.*

of information processing based on the physical or technical properties of an object."[119]

Pursuant to category (1), a law of nature is utilized for the execution of the control of hardware resources, as well as for processing with respect to the control of hardware resources.[120] These methods are afforded patent protection based on the notion that "the control of hardware resources" necessarily is based on the physical or technical properties of an object that is being controlled.[121] That is, when hardware resources are controlled by software, or for processing with respect to that control, natural laws are necessarily utilized.[122]

Category (1) is satisfied whether or not the claims explicitly recite hardware resources.[123] Of course, where the hardware resource *is* claimed, natural law is further recognized as being utilized under condition (II) of the general test. Category (1), therefore, has significance for inventions which use common hardware resources such that the hardware itself would not necessarily be claimed.

Category (2), on the other hand, is ambiguous in that the terms "object" and "technical" are not specifically defined. Nevertheless, the term "object" has been interpreted as any existing object.[124] In addition, "technical" properties of an "object" include a "signal, character, image, picture, data, layout, pattern, shape, hardware or the like."[125] If the claimed invention processes information based on the physical or technical properties of an object, natural laws are necessarily utilized.

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[119] *Id.* ch. 2.2.2.

[120] *See infra* note 122 and accompanying text for the definition of hardware resources.

[121] JPO Guidelines, *supra* note 73, at 4-5.

[122] *Id.* at 5.

[123] *Id.* ch. 2.2.2(I)(1).

[124] Tani, *supra* note 4, at 115.

[125] *Id.*; *see also* STOBBS, *supra* note 13, § 10.9 (noting the same definitions according to the Japanese Patent Attorneys Association).

The "mere recitation" or "mere use" limitation specifically is concerned with the recitation of hardware resources to implement mathematical algorithms. If the "mere use of hardware resource" satisfied condition (II), this would be "substantially equal to a judgment that an intrinsically unpatentable matter (algorithm of mathematical formula . . .) constitutes a statutory subject matter."[130] Inventions involving mathematical algorithms inherently require hardware resources if a computer is to be used for information processing.[131] Hence, any recitation of hardware would risk being no more than a "mere recitation" of resources. Clearly, the less a claim recites an algorithm and the more it recites hardware, the less likely the claim will be to fail under the "mere recitation" exception. Where the claim preempts the use of the mathematical algorithm, the claim will almost certainly fail.

Though the JPO Guidelines take special note of mathematical algorithms, the "mere recitation" limitation is applicable to all forms of software related inventions. One area of concern would be for computer codes and languages, which arguably require limitations to hardware resources at least to the same extent as mathematical algorithms.

Somewhat related to the "mere recitation" exception, the JPO Guidelines note that "an invention claimed as 'a recording medium having a program recorded therein' has its feature in the information (program per se recorded in the medium) . . . [and] is not considered as 'statutory invention.'"[132] Surely, if an applicant's invention rests in the storage medium itself, there would be no need to claim the specific code. Thus, the presence of code indicates that the medium itself is not novel, and is merely to be used to introduce patentable subject matter into the claim. The JPO Guidelines consider this to be a "mere presentation of information" and not a statutory invention.[133]

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[130] *Id.*

[131] *Id.* Yet, the JPO Guidelines do not indicate what is considered to be a mathematical algorithm.

[132] *Id.* ch. 2.2.4(3), at 7.

[133] *Id.*

However, amending the claim preamble to prevent claiming a program or software will avoid such a rejection.[138]

Interestingly, computer code and mathematical algorithms are not expressly included in this list. Nonetheless, both mathematical algorithm and computer code are likely to be nonstatutory for failure to utilize natural law according to either condition (I) or (II). Condition (II) would only be satisfied, if at all, where there is a meaningful recitation of hardware, and a sparse recitation of the algorithm or code.

Condition (I), however, applies to "information processing," so it is doubtful whether computer code would ever meet this threshold test. Likewise, an invention which preempts use of a mathematical algorithm would fail under condition (I) since it does not control hardware resources under category (1) or concern a "physical" or "technical" property of an object under category (2). Yet, if the invention moved away from preemption, it would probably move into statutory subject matter.

3. Analysis Of JPO Guidelines

The JPO Guidelines certainly provide a significant range of protection for computer software. Yet, in the absence of specific guidance from courts, it is difficult to assess the precise scope of protection that is granted. Although the test is laid out in a straightforward manner, the terms and language are somewhat indistinct so as to provide leeway and flexibility in its application.

Nonetheless, hardware inventions that rise above the level of "mere recitation" are clearly protected under condition (II). Likewise, the United States bases patentability on the recitation of physical application. In addition, though not an explicit requirement, U.S. case law (in contrast to the PTO Guidelines), suggest that an undefined threshold level of physical application is required for patentability.[139] Thus, the JPO Guidelines provide a brighter line test than in the United States.

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[138] *Id.*

[139] *See supra* notes 52, 60.

operational steps of the software process. Of course, these categories are conditioned on the invention not being an abstract idea or having a "mere recitation" of hardware resources. Thus, the PTO Guidelines adopt the provisions of the JPO Guidelines in a manner supported by U.S. case law.

Hence, despite the use of distinctive language, the JPO Guidelines appear to be analogous to the test for "abstract idea." The JPO Guidelines, however, clearly give insight into the types of inventions which risk being considered an abstract idea or scientific principle. Though these types of inventions would also be suspect under a U.S. analysis, U.S. case law remains flexible without committing to the preemption of any given type of discovery.

C. *Europe*

European patents are granted for inventions which are susceptible to industrial application,[140] except programs for computers.[141] Despite this seemingly clear exclusion, protection is still available for computer programs. The language of article 52(1)(c), while precluding computer programs from patentability, does not expressly preclude a computer storing a program from being patentable subject matter. Thus, the trend has been to afford patent protection to inventions stored in computers which have a technical effect or contribution, regardless of whether the invention is claimed as a device or as a process.

The European Patent Office ("EPO") issued examining guidelines[142] that specifically address the issue of computer program patentability. In short, merely storing a program on a disk or in a general computer will not render the combination patentable.[143] However, where the combination makes a technical contribution, patentability is not precluded merely because a program is used in the implementation. Thus, "program-

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[140] Convention on the Grant of European Patents, Oct. 5 1973, art. 52(1), 1160 U.N.T.S. 231 [hereinafter European Patent Convention].

[141] *Id.* art. 52(2)(c).

[142] European Patent Office Examining Guidelines, § 4.9a, ch. 2 § 4.14a, ch. 4 § 2 (1985) [hereinafter EPO Guidelines].

[143] *Id.* at ch. 4 § 2.3.

Finally, it is noted that the presence of a nonstatutory program does not render the entire invention nonstatutory. Rather, the invention is nonstatutory only to the extent the invention relates to the nonstatutory material.[151]

In sum, software will be patentable when stored in a computer and the invention has a technical effect. A technical effect will be found to exist where there is a change to a physical entity. However, the presence of a change is not determinative in itself. Rather, "the examiner should disregard the form or kind of claim and concentrate on its content in order to identify the real contribution which the subject-matter claimed, considered as a whole, adds to the known art."[152]

Europe joins the United States and Japan in their disfavor of software lacking physical implementation. Instead, patentability is based upon the merits of the underlying technical contribution, which software neither destroys, nor aids. As with Japan and the United States, there must be more than a "mere recitation" of technical contribution. Finally, pure mathematical algorithms are nonstatutory.

III. CONCLUSION

The extent to which software is protected is unclear in all three domains. Though stated somewhat differently, each system follows the concept that abstract ideas, laws of nature, or scientific principles are nonstatutory. Moreover, the notion of an abstract idea being nonstatutory has lead to the examination for physical application of an invention, while giving lip service to processes.

The United States is commonly thought of as leading the way in the protection of computer-implemented inventions. Yet, in the end, patentability has not significantly progressed beyond use of the term "abstract." Japan and Europe, on the other hand, identify more particular

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[151] "The provisions of [art. 52(2)] shall exclude patentability of the subject-matter activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject-matter or activities *as such*." European Patent Convention, *supra* note 140, art. 52(3) (emphasis added).

[152] EPO Guidelines, *supra* note 142, at ch. 4 § 2.2.

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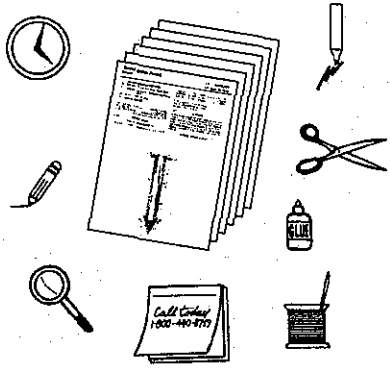

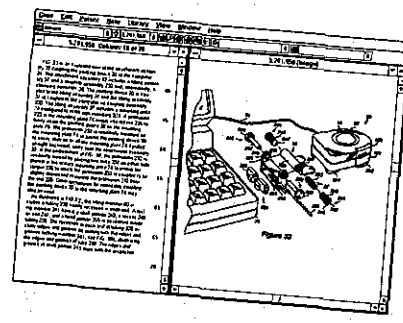

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May 1, 1996—Boston, Massachusetts

*Pennsylvania	9.5 (.50)	*Utah	12.0 (1.0)

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1996 Spring Meeting *(No Ehtics Credit)*
May 1-3, 1996—Boston, Massachusetts

Alabama	13.80	Minnesota	11.25	South Carolina	13.75
Arkansas	13.75	Mississippi	13.75	Tennessee	13.75
California	15.75	Missouri	16.50	Texas	13.75
Connecticut	13.75	Montana	13.75	Utah	16.50
Delaware	13.75	Nevada	13.50	Vermont	16.50
Florida	16.50	New Mexico	16.50	Virginia	12.00
Georgia	13.80	North Carolina	13.75	Washington	16.00
Idaho	12.00	North Dakota	13.00	West Virginia	16.50
Indiana	13.75	Ohio	13.75	Wisconsin	14.00
Iowa	13.75	Oklahoma	16.50	Wyoming	13.75
Kansas	16.50	Oregon	16.00		
Kentucky	13.75	Pennsylvania	13.50		

1996 Biotech Meeting
May 17, 1996—Arlington, Virginia
June 7, 1996—Chicago, Illinois
June 14, 1996—San Francisco, California

*California	6.50 (.50)	*North Carolina	6.50 (.50)	*Texas	6.50 (.50)
Iowa	6.50	*Ohio	6.50 (.50)	*Virginia	6.50 (.50)
Minnesota	6.25	*Pennsylvania	6.50 (.50)		
*Missouri	7.75 (.60)	*Tennessee	6.50 (.50)		

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PCT Meeting *(No Ethics Credit)*
June 24-25, 1996—Houston, Texas

California	14.50	Minnesota	14.50	South Carolina	14.50
Delaware	14.00	New Mexico	17.50	Tennessee	14.50
Georgia	14.50	Ohio	14.50	Texas	14.50
Indiana	14.50	Oklahoma	17.50	Virginia	17.50
Iowa	14.50	Pennsylvania	14.00	Washington	15.50

FUTURE MEETINGS calendar

1996

August 3-7	ABA-IPL SECTION, Annual Meeting, The Hyatt Regency Grand Cypress, Orlando, Florida (312-988-5628 fax)
September 10-14	AIPPI World Intellectual Property Forum, Interlaken, Switzerland
September 20-21	FRANKLIN PIERCE LAW CENTER, Third Annual Seminar in its International Intellectual Property Practice Series—"Protecting Industrial Property in Mexico and Central America" at Franklin Pierce Law Center in Concord, New Hampshire. For more information, contact Professor Karl Jorda at 603-224-3342; e-mail kjorda@fplc.edu. Or, visit Franklin Pierce's home page at http://www.fplc.edu.
September 29 October 2	LICENSING EXECUTIVE SOCIETY, LES (USA & CANADA) Annual Meeting, El Conquistador Resort and Country Club, Las Croabas, Puerto Rico (703-836-3106)
October 17-18	AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, Legal Secretaries & Administrators Conference, Crystal City Marriott Hotel, Arlington, Virginia (703-415-0780)
October 23	AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, National Conference on Industrial Design Protection, J.W. Marriott Hotel, Washington, D.C. (703-415-0780)
October 23-24	INTERNATIONAL INTELLECTUAL PROPERTY ASSOCIATION (IIPA), Annual Meeting, The Willard Inter-Continental Hotel, Washington, D.C. (202-785-1814)
October 24-26	AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, Annual Meeting, J.W. Marriott Hotel, Washington, D.C. (703-415-0780)
October 31- November 2	PATENT AND TRADEMARK INSTITUTE OF CANADA, 70th Annual General Meeting, The Empress Hotel & Victoria Conference Centre, Victoria, British Columbia, Canada (613-234-0516)
December 2-3	INTELLECTUAL PROPERTY OWNERS (IPO), Annual Meeting, J.W. Marriott Hotel, Washington, D.C. (202-466-2396)

1997

January 18-22	ABA-IPL SECTION, Mid-Winter Meeting, The Registry Resort, Naples, Florida (312-988-5639)
January 22-25	AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, Mid-Winter Meeting, Marriott's Marco Island Resort, Marco Island, Florida (703-415-0780)
January 26-29	ASSOCIATION OF CORPORATE PATENT COUNSEL, The Breakers, Palm Beach, Florida (216-425-8333)

ANNUAL MEETING

October 24-26, 1996

J.W. Marriott Hotel
Washington, DC

This year's Annual Meeting will be held from Thursday, October 24, 1996 through Saturday, October 26, 1996. Thursday's professional program will feature How-To sessions addressed to the areas of patents, trademarks, copyrights, ethics, civil and appellate litigation, and the proposed amendments to UCC Article 2B. How-To sessions will include topics such as "means-plus-function" patent claim limitations, the patent written description requirement, the Federal dilution statute, calculation of damages for copyright infringement, handling malpractice claims, and effective appeal of intellectual property actions to the United States Supreme Court. The How-To sessions will also take due cognizance of the increasing role of the Internet in intellectual property practice by addressing a variety of topics, such as effective use of the Internet to conduct prior art searches and to clear trademarks and copyrights. On Friday, there will be three breakout sessions dealing with emerging patent litigation issues, multimedia, and law practice management. Topics for the breakout sessions include a mock *Markman* hearing, clearing multimedia products, and partnership compensation. Our invited luncheon speaker for Friday is Ambassador Charlene Barshefsky, the Acting United States Trade Representative. There will also be a presentation on Friday by famous novelist, Tom Clancy, who is the author of a number of best-selling novels, such as *The Hunt For Red October* and *Debt of Honor*. On Saturday morning, October 26, 1996, there will be a plenary session featuring recent developments in patents, trademarks, copyrights, and trade secrets. A luncheon will follow with an address by another noted speaker. The program will also feature prominent private, corporate and foreign practioners, as well as distinguished jurists from both the United States Court of Appeals for the Federal Circuit and the Federal District Courts. Together, these discussants will provide an insightful, comprehensive and practical analysis of intellectual property issues of acute concern to most practitioners.

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requirements that an invention must posses in order to be statutory. Though the particularity of Japan and Europe may be thought to be further limiting, comparable protection is ultimately provided under U.S. law.

In the United States, the program must be interconnected with claimed physical elements. In Japan, the software must either be a hardware resource, be associated with properties of a physical object, or control hardware resources. In Europe, when looking for a technical advance, inventions which change a physical object are held statutory. Moreover, the United States, Japan, and Europe each require a threshold level of application to be present in process inventions.

The bias toward physical embodiment is likely to continue in an effort to avoid patenting abstract ideas. Even though process patents are available in each forum, the protection is limited and must be supported by sufficient physical application. In so doing, the laws have failed to recognize the possibility of a process having technical merit in and of itself. A process is not abstract merely by virtue of being a process. Yet, to condition patentability of processes on the presence of subject matter that is either tangible or representative of physical activity, is a disservice to that process.

controlled machines and program-controlled manufacturing and control *processes* should normally be regarded as patentable subject-matter."[144]

The EPO Board of Appeal, in *Vicom*,[145] further defines what it is to be considered a statutory "technical process." The Board noted that a mathematical algorithm, which is nonstatutory, is performed on numbers and has a numerical result.[146] As such, it is an abstract concept and does not have a direct technical result.

A technical process, on the other hand, results in a certain change to a physical entity.[147] The process may be carried out by a computer having suitable hardware or a general purpose computer that is programmed. However, a program is not ipso facto patentable merely because it brings about a change in a physical entity.[148]

Accordingly, the Board has held that merely storing a program in a computer does not render the combination patentable.[149] Rather, "something further is necessary . . . . [the] decisive [inquiry] is what technical contribution the invention makes to the known art.' There must, . . . be some technical advance on the prior art in the form of a new result [e.g., a substantial increase in processing speed as in *Vicom*]."[150]

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[144] *Id.* (emphasis added).

[145] VICOM/COMPUTER-RELATED INVENTION, 2 Eur. Pat. Office Rep. 74 (1987) (holding a claim directed to "[a] method of digitally processing images" to be patentable subject matter).

[146] *Id.* at 79.

[147] *Id.* (noting that the physical entity may be an image stored as an electrical signal).

[148] IBM/DOCUMENT ABSTRACTING AND RETRIEVING (T22/85, Eur. Pat. Office J. 1-2, 12 1990), *noted in* STOBBS, *supra* note 13, § 10.5.

[149] KOCH & STERZEL/X-RAY APPARATUS (T26/86, Eur. Pat. Office J. 1-2, para. 3.2 1988).

[150] Merrill Lynch/Automated Trading Sys., 1989 R.P.C. 194 (Eng. C.A.).

On the other hand, the JPO Guidelines exempt certain types of inventions that are outside the scope of protection, such as programming language, program listings, and recording mediums storing programs. Each of these provisions are similarly excluded from protection in the United States.

As in the United States, the JPO Guidelines disfavor protection of mathematical algorithms and software. Under both systems, mathematical algorithms and software are not specifically ineligible for protection, and an invention is not invalid merely for incorporating software or mathematical algorithms. Yet, we can see a definite influence of physical implementation on the patentability of computer software in Japan as in the United States.

In addition, the JPO Guidelines exclude "abstract ideas" from patentability by defining the particular types of invention that have natural law. Condition (I), for instance, applies to "information processing," for which the claim need not recite hardware to be patentable. Although under this guideline, the JPO opens the door to process claims and possible abstract ideas, the invention must still fall within either category (1) or (2), which are each tied to specific physical elements. More specifically, category (1) requires the information processing to be for the control or processing of hardware resources, and category (2) requires the processing to be based on the physical or technical properties of an object. These restrictions clearly seek to exclude inventions which are merely abstract ideas or scientific principles through the requirement of physical application.

Another limitation the JPO Guidelines place on software is the "mere recitation" restriction. Clearly, where an invention preempts the use of a mathematical algorithm, it is likely to be held nonstatutory since it would necessarily lack the relation to an "object" or control of hardware that is more than a mere recitation.

One notable distinction between the PTO Guidelines and the JPO Guidelines is in the area of patentability of computer memory. The PTO Guidelines clearly provide that a computer-readable memory that directs a computer to function is a statutory article of manufacture. The JPO Guidelines, on the other hand, would regard this as printed matter.

The PTO Guidelines coincide with the JPO Guidelines to protect a computer having actions directed by software, as well as for the specific

The JPO Guidelines indicate that condition (II) has special significance for inventions which, though executing information processing, fail to meet category (2) of condition (I). That is, even if the invention does not process information based on the physical or technical properties of an object, a natural law will be found if the invention uses a sufficient amount of hardware.[134]

The JPO Guidelines indicate further exceptions to condition (II). For instance, a claim does not constitute statutory subject matter if the hardware is used for "mere data gathering activities" or "insignificant post solution activities."[135]

Hence, although hardware resources encompass a large scope of materials, several exceptions provide notable limitations: mere recitation or use, mere data gathering, insignificant post solution activities, and mere recording medium. These exceptions, while not quite swallowing the rule, indicate that patents will only be granted for hardware where the hardware has some gravity in being claimed.

c. *Subject matter exempt as unpatentable*

Programming languages, programs per se, and program listings are specifically exempt from patentability.[136] If the invention claims a program or software, it is considered a computer program per se and nonstatutory.[137]

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[134] *Id. ch. 2.2.4(3)*, at 5-6 (noting that "[e]ven when the use of natural laws is not recognized in the information processing per se by software, as is often the case with software related inventions which execute information processing in applied fields, a claimed invention can be considered as utilizing natural laws if the invention utilizes hardware resources . . . [other than] the 'mere use of hardware resources'"). *Compare supra* note 128 and accompanying text.

[135] *See* Tani, *supra* note 4, at 116. These considerations are analogous to the factors examined in the *Freeman* test for mathematical algorithms in U.S. practice. *In re* Freeman, 573 F.2d 1237, 197 U.S.P.Q. (BNA) 464 (C.C.P.A. 1978).

[136] JPO Guidelines, *supra* note 73, ch. 2.2.4 (2).

[137] *Id.* ch. 2.2.4(4), at 7.

As with category (1), the claim need not recite explicitly hardware resources, though the claim will likely recite the object to which the invention is directed.[126] In contrast to category (1), category (2) has implications for inventions in which hardware resources are used, but not recited in the claims. Additionally, category (2) extends to inventions for processing information in which hardware resources are *not* necessarily used, but nonetheless are based on the physical or technical properties of an object, either real or inanimate.

ii. CONDITION (II): Utilization of hardware resources

Though condition (II) seems rather straightforward, there are several exceptions. Initially, the JPO Guidelines set forth a broad definition of hardware resources as "physical devices or physical elements used for processing, operation or realization of a function. Hardware resources include the computer as a physical system (hardware) and its constituent elements such as CPU, memory, input device, output device, or other physical devices connected to the computer."[127]

However, the JPO Guidelines are quick to note that a claim will not be found to utilize natural laws just by the "mere recitation" of hardware resources.[128] Specifically, natural law is not utilized where the limitations to the hardware resource "have no more contents [sic] than merely indicating that hardware resources are used in some form or other."[129]

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[126] The examples included in the JPO Guidelines are as follows: (1) "An image processing method by computer;" (2) "a method for detecting transmission errors of digital signals;" and (3) "A method for generating and displaying a circle." JPO Guidelines, *supra* note 73, ch. 2.2.2(I)(2). In these situations, the object on which the processing is based is clearly recited (for example, an image, digital signals, and a circle). However, the hardware resources, if any, need not be recited (for example, only the first example states the use of a computer).

[127] *Id.* ch. 2.3(3), at 4.

[128] *Id.* ch. 2.2.1, at 4.

[129] *Id.*

while the utilization of natural laws is denied if both of conditions (I) and (II) are not satisfied.[117]

(I) Natural laws are utilized in information processing by software
(II) Hardware resources are utilized.[118]

i. CONDITION (I): utilization of natural laws in information processing

The JPO Guidelines set forth two categories which utilize natural laws for information processing: "(1) Execution of control for hardware resources, or processing with respect to the control . . . [and] (2) Execution

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[117] It should be noted that this language is redundant. In the first portion of the test, a natural law is used if condition (I) is satisfied or, in the alternative, condition (II) is satisfied. The second portion states that a natural law is *not* found if both conditions (I) *and* (II) are *not* satisfied. Though confusing at first blush, the second portion actually does no more than to restate the first portion of the test with double negatives.

The presence of a redundant condition, and the use of a double negative, lends ambiguity and confusion to the analysis. One concern, for instance, is whether the applicant must show that either condition is met, or that both conditions are not met.

Subsequent discussion in the guideline supports the former. For instance, the guideline states that "[e]ven when the use of natural laws is not recognized . . . a claimed invention can be considered as utilizing natural laws if the invention utilizes hardware resources." *Id.* at ch. 2.2.2 (II). It is further noted, however, that ch. 2.2.3, titled "Inventions Which Are Not Considered as Utilizing Natural Laws," are those "inventions which are not considered as utilizing natural laws in information processing by computer, *and* also not considered as utilizing hardware resources." *Id.* (emphasis added).

[118] *Id.* at ch. 2.2.1. *Accord* Tani, *supra* note 4, at 114 (reciting test as "[i]f the *claimed invention as a whole* satisfies either Condition (I) or (II) . . . the invention utilizes natural laws, while the utilization of natural laws is denied if both [conditions] are not satisfied." (emphasis added)).

Japanese law provides that "[a]ny person who has made *an invention* . . . may obtain a patent therefore."[107] An "invention" is defined as "the highly advanced creation of technical ideas by which a law of nature is utilized."[108]

The difficulty in determining whether computer software is patentable is the question of whether a law of nature is utilized. Moreover, Japan does not have a "specific statutory provision or court decision dealing with software patentability."[109] However, the Japanese Patent Office ("JPO") has assembled guidelines specifically addressing the issue of how to determine if a software invention utilizes natural law.

2. Japanese Patent Office Guidelines

a. *Inventions subject to the guidelines: meaning of "software related invention"*

The JPO has issued guidelines[110] addressing the patentability of a "computer software related invention."[111] The term "software related invention" includes inventions which require either a program or a procedure relating to the operation of a computer for its implementation.[112]

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[107] Japanese Patent Law, Law No. 121 of 1959, ch. II, art. 29 (1) (amended by Law No. 27 of 1987) (emphasis added).

[108] *Id.*

[109] MICHAEL D. SCOTT, SCOTT ON COMPUTER LAW § 4.46 (2d ed. 1991).

[110] *See generally JPO Guidelines*, supra note 73. The 1994 JPO Guidelines unified three standard guidelines previously set forth: *Examination Standard for Computer Program Related Inventions (Part I)* (Dec. 1975), *Examination Guidelines for Inventions Relating to Microcomputer Applied Technology* (Dec. 1982), and *Examination Method of Computer Software-Related Invention (Draft)* (Jan. 1989). *See also* Tani, *supra* note 4.

[111] Part VIII of the JPO Guidelines is entitled "Examination Guidelines for Inventions in Specific Fields," of which Chapter 1 is titled "Computer Software Related Invention."

[112] Literally, the guidelines define a software related invention as "an invention which requires software for its implementation," wherein software is defined as "a program or procedure relating to the operation of a computer." JPO Guidelines, *supra* note 73, at 11.

where there is a practical application for the invention.[99] In order to determine whether a claim is limited to a practical application, the examiner should determine what subject is being manipulated and how it is being manipulated, taking into consideration statements of intended use, field of use, data gathering steps, and post-manipulation activity.[100]

The PTO Guidelines do not explicitly restrict the meaning of "practical application" to inventions that induce a physical transformation.[101] The exclusion of a physical transformation requirement is quite marked,[102] and enlarges patent protection to include software having non-physical objectives. Nevertheless, the boundary between statutory "practical application" and unstatutory abstract idea[103] remains unsettled. This single issue is, in essence, the paramount complication that will continue to confront courts.[104]

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[99] "Only when the claim is devoid of any limitation to a practical application in the technological arts should it be rejected under § 101." *Id.* at 7,486.

[100] *Id.*

[101] Nonetheless, at least one court considers the PTO Guidelines to incorporate a physical transformation analysis. State Street Bank and Trust Co. v. Signature Fin. Group, Inc., 38 U.S.P.Q.2d 1530, 1539 (D. Mass. 1996). However, the District Court confuses the concept of physical transformation with that of mathematical algorithms and the pure manipulation of numbers. That is, in excluding protection for mathematical algorithms, the PTO Guidelines should not be understood as incorporating a physical transformation requirement.

[102] The absence of a "physical transformation" requirement is in stark contrast to the PTO Proposed Guidelines, which required that, "[t]o be statutory, the claimed process when practiced must *physically transform* the subject matter manipulated—something must happen other than manipulating concepts or converting numbers to different numbers." PTO Proposed Guidelines, *supra* note 11, at 665 (emphasis in original).

[103] Process claims that are solely mathematical operations or the manipulation of abstract ideas are nonstatutory. *Id.* at 7,484.

[104] "The subject matter courts have found to be outside [§ 101] is limited to abstract ideas, laws of nature and natural phenomena. While this is easily stated, determining whether an applicant is seeking to patent an

otherwise patentable process to be unpatentable.[88] Yet, to look for physical application of a program is contrary to this notion.

Admittedly, the determination of whether a process is an abstract idea is a very conceptual and difficult task. This difficulty is compounded by the interaction of mathematical algorithms with software. Nevertheless, where software only involves a process, the courts and the PTO should apply an analysis for process application rising above an "abstract idea."

6. PTO Guidelines And Legal Analysis

The PTO Guidelines[89] were developed to assist PTO personnel in the examination of applications drawn to computer-implemented inventions and to clarify the PTO's position on patentability standards.[90] The PTO Guidelines were drafted to be fully consistent with binding case law precedent.[91] Unfortunately, the PTO Guidelines do not stretch far beyond the case law, and they nearly mirror the ambiguity and complications that they sought to cure.

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[88] "[A] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, *computer program*, or digital computer." *Diamond v. Dehr*, 450 U.S. 175, 187, 209 U.S.P.Q. (BNA) 1, 8 (1981) (emphasis added); *see also, In re* Pardo, 684 F.2d 912, 916, 214 U.S.P.Q. (BNA) 673, 677 (C.C.P.A. 1982). *See generally In re* Iwahashi, 888 F.2d 1370, 1374-75, 12 U.S.P.Q.2d (BNA) 1908, 1911-12 (Fed. Cir 1989) (holding that the use of computer hardware to calculate a mathematical algorithm will in general not preempt the algorithm, since other hardware embodiments are available for calculating the algorithm). The presence of an algorithm does not preclude patentability since "every step-by-step process, be it electronic or chemical or mechanical, involves an algorithm in the broad sense of the term." *Id.* Rather, in "determining the eligibility of . . . [a] claimed process for patent protection under § 101, . . . [the] claims must be considered as a whole." *Diehr*, 450 U.S. at 188, 209 U.S.P.Q. (BNA) at 14; *In re* Gelnovatch, 595 F.2d 32, 41, 201 U.S.P.Q. (BNA) 136, 145 (C.C.P.A. 1979) ("[T]he mere presence of a calculation or the computer implementation of the method does not mandate a holding that the claimed procedure is not a 'process' within the meaning of 35 U.S.C. § 101.").

[89] PTO Guidelines, *supra* note 12.

[90] *See Legal Analysis, supra* note 36, at 659.

[91] *Id.*

application. In this sense, it is hard to imagine a more particular application of an invention than the reduction down to a formula.[83]

Third, the test for physical embodiment is not completely sound. Dissenting opinion in *Alappat*, Judge Archer challenged the idea that where the subject matter used in connection with the physical embodiment is not statutory, the physical embodiment should not be relevant to a section 101 analysis.[84] For instance, storing a computer program or music on a diskette physically modifies the diskette so that it is unlike any other. Nevertheless, the presence of hardware should not render the invention statutory. Rather, if the process cannot stand alone, it should not be rescued by any amount of hardware.

Likewise, computer software should not be judged by the presence of hardware, but by the merits of the process. This leads to a final point: processes are not inherently abstract ideas.[85] As such, the process must be examined to determine the particular level of abstraction of process

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[83] The difficulty, of course, lies in determining when the formula addresses a scientific principle, and when it is merely the application of an idea. This distinction may deal with whether the formula is controlling the invention, or is itself controlled by the laws of nature. One can exploit nature, but not control it. STOBBS, *supra* note 13, § 9.41. "You can draw a circle, but you cannot control pi. You can have control over how big the circle is, but you cannot change pi—the relationship between your circle and its diameter. Pi is a principle or law of nature. You can exploit a law of nature, but cannot change it . . . . Push an anvil off a cliff, and it falls, irreversibly. You control the push; gravity does the rest." *Id.* It follows that if you write an algorithm to control the size of the circle, you are not seeking to preempt the scientific principle (here pi) behind the algorithm. Rather, you are merely using the scientific principle in application.

[84] That is, subject matter (for example, computer software) is not rendered patentable by the simple presence of patentable subject matter (for example, structure). *In re* Alappat, 33 F.3d 1526, 1554, 31 U.S.P.Q.2d (BNA) 1545, 1566 (Fed. Cir. 1994) (Archer, J., concurring in part and dissenting in part).

[85] *In re* Meyer, 688 F.2d 789, 795, 215 U.S.P.Q. (BNA) 193, 198 (C.C.P.A. 1982) ("In considering a claim for compliance with 35 U.S.C. § 101, it must be determined whether a scientific principle, law of nature, idea, or mental process, which *may* be represented by a mathematical algorithm, is included in the subject matter of the claim.") (emphasis added).

software invention claim physical elements, but the physical elements must be sufficiently interconnected to rise to the level of "a physical, interconnected arrangement of hardware."[77] This course, however, only serves to shift the focus of patentability away from whether software is statutory subject matter, to determining what is a "physical" element and what is a sufficient association between the computer software and the "physical" element.[78]

The concentration on physical elements draws a trivial line in the sand. The *Alappat* rationale of patenting an invention that claims conventional elements performing their common functions is difficult to reconcile with *Warmerdam* and *Trovato* which hold that the process alone is

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1455, 1459 (Fed. Cir. 1994) (holding method claims nonstatutory which "do not reflect any transformation or conversion of subject matter representative of or constituting *physical activity or objects*."); *In re* Grams, 888 F.2d 835, 838, 12 U.S.P.Q.2d (BNA) 1824, 1827 (Fed. Cir. 1989) ("[I]f there are physical steps included in the claim in addition to the [mathematical] algorithm, the claim *might* be eligible for patent protection.") (emphasis added).

[77] *In re* Warmerdam, 33 F.3d 1354, 1362, 31 U.S.P.Q.2d (BNA) 1754, 1760 (Fed. Cir. 1994). In *Trovato*, an apparatus having "means for storing," "means for assigning," and "means for starting" was held to be nonstatutory. The claim in question was drawn to a "computer apparatus," yet was held to be no more than a "guise" of the kind that *Alappat* warned about. *In re* Trovato, 42 F.3d at 1383, 33 U.S.P.Q.2d (BNA) at 1200. *Trovato* distinguished itself from *Alappat*, stating that Alappat's "application disclosed a specific hardware embodiment. . . . [In addition, *Alappat*] extensively relied upon the hardware listed in the specification, including arithmetic logic circuits, barrel shifters and a read only memory . . . [as well as] the combination of claimed elements from which the inventor formed a machine." *Id. Trovato* has been vacated and the opinion withdrawn. *In re* Trovato, 60 F.3d 807, 35 U.S.P.Q.2d (BNA) 1570 (Fed. Cir. 1995) (en banc).

[78] For instance, as discussed in relation to *Warmerdam* and *Lowry*, it is not clear whether a "data structure" is sufficient to render a claim statutory. *See supra* note 58 and accompanying text.

A line of cases recite that a statutory process includes a process in which there are "changes to *intangible* subject matter representative of or constituting physical activity or objects."[71] However, software does not appear to be included in this amorphous "intangible subject matter."[72] Moreover, not all software achieves, or represents, physical results or activities, and software per se does not have a physical structure of its own.[73] Accordingly, in the absence of sufficient physical structure, courts have been reluctant to consider software to be patentable as a process.

AIPLA Q.J. 167, 180 (1994) ("For a method or process to be patentable . . . the case law for over a century has required either limitations in the claim to a particular apparatus or else 'that there be transformation or reduction of subject matter' from one state to another.").

[71] "[*Cochrane v. Diener*, 94 U.S. at 787] has sometimes been misconstrued as a 'rule' or 'definition' requiring that all processes, to be patentable, must operate physically upon substances." *In re* Schrader, 22 F.3d 290, 295 n.12, 30 U.S.P.Q.2d (BNA) 1455, 1459 n.12 (Fed. Cir. 1994). "In the *Telephone Cases*, 126 U.S. 1 (1887), the court upheld the validity of a claim directed to a method for transmitting speech by impressing acoustic vibrations representative of speech onto electrical signals. If there was a requirement that a physical *object* be transformed or reduced, the claim would not have been patentable." *Id.* (emphasis in original).

[72] Electric signals are inherently used by a computer to implement software operations. In regard to statutory processes for computer-implemented inventions, one commentator asserts that "characterization of information as 'signals' may be inconclusive, since they 'may represent either physical or abstract quantities.'" Stephen G. Kunin, *Patentability of Computer Related Inventions in the United States Patent and Trademark Office*, 77 J. PAT. & TRADEMARK OFF. SOC'Y, 833, 836 (1995) (comparing *In re* Walter, 618 F.2d 758, 205 U.S.P.Q. (BNA) 397 (C.C.P.A. 1980) and *In re* Richman, 563 F.2d 1026, 195 U.S.P.Q. (BNA) 340 (C.C.P.A. 1977)). Still, the electrical signals of software, in and of themselves, apparently do not meet the second half of the test to *represent or constitute* physical activity. Otherwise, even software relating to processing of non-physical information, as in *Warmerdam*, would be patentable.

[73] "There are various kinds of software related inventions; some relate to an apparatus connected to a computer, or a controlling of a computer per se, *and some related to a processing of non-physical information such as business transaction information.*" Examination Guidelines for Patent & Utility Model in Japan, pt. VIII, ch. 1, at 3 (AIPPI ed. 1994) (emphasis added) [hereinafter JPO Guidelines].

finding an invention to be statutory.[64] *Trovato* did recognize that "the entire disclosure consists of flow charts and program code computing the least cost path from starting to goal-states based upon data in the configuration space."[65]

Pursuant to *Diehr*, the proper course would be to inspect the flow charts for sufficient specificity that might remove the claims from being considered an "abstract" idea. Nevertheless, *Trovato* considered the sole presence of flow diagrams as further evidence that there was no physical implementation, and therefore no specific application. Simply put, *Trovato* failed to recognize that a sufficient process application, without any physical application, may *conceptually* remove the claims from the realm of an abstract idea, thereby rendering the process and device claims[66] statutory.

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[64] Diamond v. Diehr, 450 U.S. 175, 187, 209 U.S.P.Q. (BNA) 1, 8 (1981) (noting that "[i]t is now commonplace that an *application* of a law or nature or mathematical formula to a known structure or process may well be deserving of patent protection" (emphasis added)); *see also* Arrhythmia Research Technology, Inc. v. Corazonix Corp., 958 F.2d 1053, 1057, 22 U.S.P.Q.2d (BNA) 1033, 1037 (Fed. Cir. 1992) ("[C]laims to a specific process or apparatus that is implemented in accordance with a mathematical algorithm will generally satisfy section 101."); *In re* Walter, 618 F.2d 758, 767, 205 U.S.P.Q. (BNA) 398, 407 ("If it appears that the mathematical algorithm is implemented in a specific manner to define structural relationships between the physical elements of the claim (in an apparatus claim) *or to refine or limit claim steps (in process claims)*, the claim . . . passes muster under § 101." (emphasis added)).

[65] *Trovato*, 42 F.3d at 1379, 33 U.S.P.Q.2d (BNA) at 1197.

[66] Upon addressing the device claims, the court held that the claimed "means" lacked "structure" and were no more than software instructions. *Id.* at 1382, 33 U.S.P.Q.2d (BNA) at 1197. Furthermore, *Trovato* distinguished itself from *Alappat*, which "unlike the disclosure here . . . disclosed a specific hardware embodiment." *Id.* at 1383, 33 U.S.P.Q.2d (BNA) at 1198. As with process claims, it would seem that the means plus function claims are statutory where there is an application of the claims, whether that application be a process or an apparatus.

elements which impart a physical organization on the information stored in memory."[56] Moreover, even though the stored data does not have a physical structure per se, it does have "electronic structure."[57]

In holding that the "data structure" has "electronic structure," *Lowry* on its face appears inapposite with *Warmerdam*, which denied data structure as statutory subject matter. Yet, whereas the invention in *Warmerdam* was deemed abstract, in *Lowry*, the data structure was held to be "[m]ore than mere abstraction."[58] That is, while *Lowry* is intimately involved with physical elements, *Warmerdam*, at best, has minimal physical relation. Thus, where an invention (whether claimed as a process or device) lacks specific application in physical components, it is no more than an abstract idea precluded under *Diehr*.

Lowry also took note of a concept adopted in earlier case law, that:

> if a machine is programmed in a certain new and unobvious way, it is physically different from the machine without that program; its memory elements are differently arranged. The fact that these physical changes are invisible to the eye should not tempt us to conclude that the machine has not been changed.[59]

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[56] *Lowry*, 32 F.3d at 1583, 32 U.S.P.Q.2d (BNA) at 1034.

[57] *Id.*

[58] *Id.* at 1583, 32 U.S.P.Q.2d (BNA) at 1035. Moreover, *Lowry* held that "the data structures are specific electrical or magnetic structural elements in a memory" providing tangible benefits. *Id.* at 1583-84, 32 U.S.P.Q.2d (BNA) at 1035. The benefits were that the "data stored in accordance with the claimed data structures are more easily accessed, stored, and erased." *Id.* at 1584, 32 U.S.P.Q.2d (BNA) at 1035.

[59] *In re* Bernhart, 417 F.2d 1395, 1400, 163 U.S.P.Q (BNA) 611, 616 (C.C.P.A. 1969) (cited with approval in *In re* Lowry, 32 F.3d at 1583, 32 U.S.P.Q.2d (BNA) at 1034-35); *see also In re* Alappat, 33 F.3d 1526, 1554, 31 U.S.P.Q.2d (BNA) 1545, 1566 (Fed. Cir. 1994) (Archer, J., dissenting). *But see In re* Prater, 415 F.2d 1393, 1404 n.29, 162 U.S.P.Q. 541, 552 n.29 (C.C.P.A. 1969) ("once a program has been introduced, a general-purpose digital computer becomes a special-purpose digital computer (i.e., a specific electrical circuit . . .) which, along with the process by which it operates, may be patented").

In contrast to *Alappat*, where the Court determined patentability based upon whether the invention was an "abstract idea," in *Warmerdam*,[46] the Federal Circuit raised the *Freeman* test. In that case, the court considered the patentability of software used to control the motion of a robotic machine to avoid collision with objects.[47] It held that the method steps were "nothing more than the manipulation of basic mathematical constructs, [which is] the paradigmatic 'abstract idea.'"[48] Thus, despite an initial announcement of the *Freeman* test, the court based its ultimate decision of patentability on the level of abstraction.[49] Hence, software which governs even highly detailed mathematical constructs are nonstatutory if accomplished in an abstract manner.

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programmed to perform particular functions pursuant to instructions from program software." *Id.* at 1545, 31 U.S.P.Q.2d (BNA) at 1558. *See also Ex Parte* King, 146 U.S.P.Q. (BNA) 590 (C.C.P.A. 1964) (explaining that a computer with controls built into hardware is patentable even though control hardware could be replaced by a stored program, and a computer system having a novel stored program in it should likewise be patentable as a machine, since the combination of computer and stored program result in a complete and unique machine as a stored program and equivalent control-logic hardware are but two sides of the same engineering coin).

[46] *In re* Warmerdam, 33 F.3d 1354, 31 U.S.P.Q.2d (BNA) 1754 (Fed. Cir. 1994).

[47] *Id.* at 1355, 31 U.S.P.Q.2d (BNA) at 1755.

[48] *Id.* at 1360, 31 U.S.P.Q.2d (BNA) at 1759. Method claim 1 involved a first step of "locating the medial axis," which the disclosure revealed to be performed according to a conventional mathematical procedure. *Id.* at 1359, 31 U.S.P.Q.2d (BNA) at 1758. The second step of the method claim is to create a hierarchy of bubbles, which the court also considered mathematical in nature. *Id.*

[49] *Id.* at 1360, 31 U.S.P.Q.2d (BNA) at 1759 (arguing that "[a]s a whole, the claim involves no more than the manipulation of abstract ideas").

Upon addressing mathematical subject matter, the Federal Circuit concluded that "the Supreme Court never intended to create an overly broad, fourth category of subject matter excluded from § 101."[38] The court did not apply the *Freeman* test. Rather, it stated that "the proper inquiry . . . is to see whether the claimed subject matter *as a whole* is a disembodied mathematical concept . . . which in essence represents nothing more than a 'law of nature,' 'natural phenomenon,' or 'abstract idea'" that is precluded under *Diehr*.[39] In so holding, the *Alappat* court endeavored to direct statutory analysis back to an "abstract idea" analysis.

Alappat held that the claimed apparatus[40] as a whole was directed to a specific machine and not an "abstract idea."[41] Specifically, the claims were patentable as a "combination of interrelated elements which combine to form a machine,"[42] even though the electrical circuitry that performed the mathematical calculations were commonly used elements.[43] *Alappat* did not address whether a computer program claimed as a process is statutory. Yet, where a program is associated with a general computer having common

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[38] *Id.* at 1543, 31 U.S.P.Q.2d (BNA) at 1556.

[39] *Id.* at 1544, 31 U.S.P.Q.2d (BNA) at 1557 (emphasis in the original).

[40] Generally, the invention in *Alappat* was for improving the display on an oscilloscope by converting a data list representing an input waveform into illumination intensity data to be displayed. *Id.* at 1537, 31 U.S.P.Q.2d (BNA) at 1551-52.

[41] *Id.* at 1545, 31 U.S.P.Q.2d (BNA) at 1558.

[42] Independent claim 15 included means for determining distance between vectors in the data list, determining elevation of a row of pixels spanned by a vector, normalizing the first two determinations, and outputting the intensity data as a function of the normalization. *Id.* at 1538-39, 31 U.S.P.Q.2d (BNA) at 1553.

[43] *Id.* at 1541, 1544, 31 U.S.P.Q.2d (BNA) at 1555, 1557 ("As is evident, claim 15 unquestionably recites a machine, or apparatus, made up of a combination of *known electronic circuitry elements*....[M]any, or arguably even all, of the means elements recited in claim 15 represent circuitry elements that perform mathematical calculations, which is essentially true of all digital electrical circuits.") (emphasis added).

essence, the *Benson-Flook-Diehr* analysis examines the applicability of the abstract idea, nature, natural phenomena, or scientific principle categories. In comparison, the *Freeman* test is used to determine whether an invention is a nonstatutory mathematical algorithm or the statutory—not "abstract"[31]—application of the mathematical algorithm.[32] Hence, whereas the *Freeman* test necessarily limits itself to an "abstraction" analysis only of mathematical algorithms, a *Benson-Flook-Diehr* analysis is applicable to *all* inventions.

Accordingly, the broader notion of abstract idea should serve as the focal point, even for cases applying the *Freeman* test. One of the difficulties with the *Freeman* test is that the term "mathematical algorithm" is not clearly defined.[33] Yet, at least several opinions indicate that computer software

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of the *Freeman* test is to "determine whether a mathematical algorithm is recited directly or indirectly in the claim," and the second step is to "determine whether the claimed invention as a whole is no more than the [mathematical] algorithm itself." *In re* Warmerdam, 33 F.3d 1354, 1359, 31 U.S.P.Q.2d (BNA) 1754, 1758 (Fed. Cir. 1994). The essence of the second step is to determine whether the claims "preempt" the use of the mathematical algorithm, or, when "viewing the claims absent the algorithm, and as a whole, no statutory subject matter is present." *In re* Trovato, 42 F.3d 1376, 1380, 33 U.S.P.Q.2d (BNA) 1194, 1197 (Fed. Cir. 1994), *vacated, opinion withdrawn*, 60 F.3d 807, 35 U.S.P.Q.2d (BNA) 1570 (Fed. Cir. 1995) (en banc).

[31] When a claimed invention includes "a mathematical formula . . . an inquiry must be made into whether the claim is seeking patent protection for that formula in the abstract." *Diamond v. Diehr*, 450 U.S. 175, 191, 209 U.S.P.Q. (BNA) 1, 10 (1981).

[32] The *Freeman* test applies the rule that "a patent cannot be obtained for a 'mathematical algorithm.'" *In re* Warmerdam, 33 F.3d at 1359, 31 U.S.P.Q.2d (BNA) at 1757; *see also In re* Abele, 684 F.2d 902, 906, 214 U.S.P.Q. (BNA) 682, 687 ("If the claimed invention is a mathematical algorithm, it is improper subject matter for patent protection.")

[33] *See, e.g., In re* Warmerdam, 33 F.3d at 1359, 31 U.S.P.Q.2d (BNA) at 1758 ("The difficulty is that there is no clear agreement as to what is a 'mathematical algorithm,' which makes rather dicey the determination of whether the claim as a whole is no more than that."); *In re* Alappat, 33 F.3d at 1543 n.19, 31 U.S.P.Q.2d (BNA) at 1556 n.19 (noting "[t]he Supreme Court . . . has not been clear as to exactly what kind of mathematical subject matter may not be patented").

computers,[22] and these cases suggested that all computer programs were nothing more than nonstatutory mathematical algorithms.[23]

However, in *Diehr*, the Court construed the *Benson* and *Flook* decisions as being based on the broad notion that only laws of nature, natural phenomena, and abstract ideas are outside section 101.[24] The invention in *Diehr* involved a process for curing synthetic rubber through the use of a formula repetitively calculated by a computer. In holding that the invention comprised statutory material, the Court stated that, in contrast to *Flook*, applicants "d[id] not seek to patent a mathematical formula."[25] Rather, the claims were directed to a process of curing synthetic rubber for which one does not need a computer.[26]

Accordingly, it is uncertain whether all programs are anything more than nonstatutory mathematical algorithms, or whether all programs are patentable since programs are particular in application, and therefore not

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[22] In both *Flook* and *Benson*, the algorithm was necessarily implemented by a computer and a computer program. *See In re* Warmerdam, 33 F.3d 1354, 1358, 31 U.S.P.Q.2d (BNA) 1754, 1757 (Fed. Cir. 1994).

[23] In *Benson*, for instance, the algorithm was held to have no "substantial practical application except in connection with a digital computer, which . . . would wholly pre-empt the mathematical formula and . . . would be a patent on the algorithm itself." *Benson*, 409 U.S. at 71-72, 175 U.S.P.Q. (BNA) at 676. *See also* 1 DONALD S. CHISUM, PATENTS § 1.03[6] (1995) ("In the last part of the [*Flook*] opinion, the Court assumes (as it did in *Benson*) that the effect of its ruling is to exclude patent protection for 'computer programs' generally. Thus, *Benson-Flook* might exclude all inventions useful primarily in computer 'software,' whether or not involving calculations of a mathematical nature."); STOBBS, *supra* note 13, § 9.15 at 289. ("After all, reasoned many, the Court has in effect held that an algorithm is not patentable, and what is software but an algorithm?").

[24] *See* Diehr, 450 U.S. at 185, 209 U.S.P.Q. (BNA) at 7-8 (explaining that *Benson* and *Flook* stand for no more than the long-established principles that laws of nature, natural phenomena, and abstract ideas are excluded from patent protection); STOBBS, *supra* note 13, § 9.16 (noting that *Benson* follows Supreme Court precedent that phenomena of nature, mental processes, and abstract intellectual concepts are not patentable).

[25] *Diehr*, 450 U.S. at 187, 209 U.S.P.Q. (BNA) at 8.

[26] *Id.* at 187, 209 U.S.P.Q. (BNA) at 8.

("PTO") published proposed guidelines[11] ("PTO Proposed Guidelines") in June of 1995, and after comment published the final version of the guidelines in February 1996 "PTO Guidelines."[12] The PTO Guidelines expand the scope of patent protection available to software.

2. The Supreme Court

The Supreme Court unwittingly began approving software patents in the mid 1800s.[13] However, the Supreme Court only directly addressed the issue of computer-related technology as patentable subject matter in three primary cases: *Benson*,[14] *Flook*,[15] and *Diehr*.[16] As will be explored below, these cases interpret section 101 to encompass all inventions which are outside the realm of nature, physical or natural phenomena, and abstract ideas.[17]

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[11] Request for Comments on Proposed Examination Guidelines for Computer-Implemented Inventions, 60 Fed. Reg. 28,778 (1995) [hereinafter PTO Proposed Guidelines].

[12] Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7,478 (1996) (effective date, March 29, 1996) [hereinafter PTO Guidelines].

[13] O'Reilly v. Morse, 56 U.S. (15 How.) 62, 69 (1853) (patenting telegraph machine code claimed as a "system of signs"). *See also* GREGORY A. STOBBS, SOFTWARE PATENTS § 10.1 (1995) ("At a very fundamental level, telegraph machine code and computer machine code are the same thing. . . . Morse's telegraph patent may well be the first software patent—issued nearly one hundred years before the modern digital computer was invented.").

[14] Gottschalk v. Benson, 409 U.S. 63, 175 U.S.P.Q. (BNA) 673 (1972).

[15] Parker v. Flook, 437 U.S. 584, 198 U.S.P.Q. (BNA) 193 (1978).

[16] Diamond v. Diehr, 450 U.S. 175, 209 U.S.P.Q. (BNA) 1 (1981).

[17] *Id.* at 185, 209 U.S.P.Q. (BNA) at 7; *see also Diamond v. Chakrabarty*, 447 U.S. 303, 309, 206 U.S.P.Q. (BNA) 193, 197 (1980) ("Congress intended statutory subject matter to 'include anything under the sun that is made by man'. . . . This is not to suggest that § 101 has no limits or that it embraces every discovery. The laws of nature, physical phenomena, and abstract ideas have been held not patentable.") (citations omitted).

implemented inventions. This article will explore the current state of the law regarding computer-related technologies as patentable subject matter in the United States, Japan, and Europe, analyze the effects of these laws, and provide a brief comparison and analysis among the different nations.

B. *Definition Of "Computer Software"*

The field of computer technology consists of several layers of technical abstraction, ranging from computer hardware[5] to computer code.[6] The present Article, however, will mainly address the patentability of computer software. Computer software, also referred to as a computer program,[7] is "a set of statements or instructions used directly or indirectly in a computer to bring about a certain result."[8] Though software may be used to achieve (or represent) physical results, software per se does not

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[5] Computer hardware consists of the physical components of the computer system, such as the screen, power supply, mouse, chips, drives, and other physical components making up a computer. *See* United States v. Seidlitz, 589 F.2d 152, 154 n.3 (4th Cir. 1978) (defining hardware as the "tangible machinery of the computer"); *see also* Jeffrey J. Blatt, *Global Intellectual Property Series 1992: Practical Strategies—Patent*, 245, 248 (PLI Patents, Copyrights, Trademarks, and Literary Property Course Handbook Series No. 342, 1992).

[6] Computer code consists of language terms and symbols used in programming. *See* JAMES VERGARI & VIRGINIA SHUE, FUNDAMENTALS OF COMPUTER-HIGH TECHNOLOGY LAW 603 (1991).

[7] The terms "software" and "program" are interchangeable. *See, e.g.*, Parker v. Flook, 437 U.S. 584, 587 n.7, 198 U.S.P.Q. (BNA) 193, 195 n.7 (1978) ("The term 'software' is used in the industry to describe computer programs"). The World Intellectual Property Organization defines computer software as "any or several of the items which follow: computer *program*, program description, and supporting material." RAYMOND T. NIMMER, THE LAW OF COMPUTER TECHNOLOGY: RIGHTS, LICENSES, LIABILITIES xliii (2d ed. 1992) (emphasis added).

[8] 17 U.S.C. § 101 (1994) (defining computer programs for copyright purposes).

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infringement litigation.[319] In this administrative proceeding, interested parties in the software industry could tell the PTO about prior knowledge and use by persons other than the petty patentee (registrant).[320] Since the PTO is more suited to making technical determinations than courts are, one might anticipate a higher quality and less expensive way of resolving such intellectual property validity controversies under the proposed regime.

Remedies for infringement would be less preemptive, except in exceptional cases, and they would appropriately be gauged to the relative contributions of the parties to commercialization (e.g., relative enablement). Remedies must not be too preemptive, but they must be sufficient to make the election of a petty patent attractive. The ordinary remedy for infringement would be reasonable and entire compensation for the use

[319] Post-grant opposition and revocation procedures already exist under European patent systems, such as the German system. HAROLD C. WEGNER, PATENT HARMONIZATION 277-86 (1992).

[320] One would expect those in the software industry to have a knowledge of the content of previously commercialized software considerably superior to that of the PTO. This procedure would therefore help overcome the past difficulty experienced in the PTO in finding relevant prior art in software cases. *See* Gottschalk v. Benson, 409 U.S. 63, 72, 175 U.S.P.Q. (BNA) 673, 677 (1972) (quoting report of presidential commission describing Patent Office's difficulty in making proper search for computer program art and stating that effect is to make "patenting of programs . . . tantamount to mere registration"). The reexamination of the Compton-Encyclopedia Britannica multimedia patent confirmed the value of post-issuance examination of prior art concerning software patents, as facilitated by software industry participation. *See Ex parte* Reed, Reex. No. 90-3270 (final rejection of multimedia patent, order of Sept. 16, 1994), *reprinted in* COMPUTER L. REP., Dec. 1994, at 776.

of security of expectation. It is therefore important to provide a clear standard in the statute or equip it with a mechanism for accomplishing clarity in discrimination between algorithms, as such, and algorithm-using machines or processes. The proposal does this by first setting a standard believed to provide predictability and clarity,[315] and then authorizing the

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[315] The central portion of the proposed statutory standard, *see Algorithm Conundrum, supra* note 4, at 222–23, for making this distinction is:

> **§ 951. Relation of software protection to patent laws**
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> (a) ALGORITHMS UNPATENTABLE.—When the main point or points in which an alleged invention departs from the prior art is an algorithm, . . . a method of doing business, or other subject matter protectable under this chapter, the sole available form of intellectual property protection, if any, for the alleged invention shall be that which this part of this title provides.
>
> (b) ALGORITHM-USING MACHINE SYSTEMS PATENTABLE.—
>
> (1) Notwithstanding subsection (a), even though an invention utilizes or carries out an algorithm, . . . method of doing business, or other subject matter protectable under this chapter:
>
> (A) if the invention is implemented in novel and unobvious apparatus, the apparatus may be patented as provided under Part II of this title;
>
> (B) if the invention is implemented by a novel and unobvious use of new or old apparatus, the use may be patented as provided under Part II of this title.
>
> (2) Novelty for purposes of Part II of this title or paragraph (1) of this subsection shall not be predicated on newly causing an otherwise conventional apparatus to operate in accordance with an algorithm, in combination with a category of printed matter, or to carry out a method of doing business. . .

To the extent, however, that the interests at stake in the protection of rights in software abstractions[313] are cohesive—are more centripetal than centrifugal—it is believed that the task can be accomplished in an appropriate software abstraction law. Whether or how successfully that has been done here is another question. The subject matter is difficult and has in the past resisted judicial analysis. The author therefore considers this paper to be part of a work in progress and welcomes the improvements that other observers will conceive.

VII. CONCLUSION

This article has described the infringement aspects of a proposed intellectual property system that would relieve the regular patent system from the strains that algorithms and other software abstractions impose on it. Other aspects of the proposed system, such as remedies and the mode of securing rights, remain to be described.

The central rights of a proprietor of rights in a software abstraction, and thus the central potential acts of infringement, are use and trafficking in the protected subject matter. The rights and concept of infringement have also been described in terms of the exemptions and privileges that limit them, many of which amount to constructive authorizations of user conduct furthering software policies. A feature of the proposed system of rights provides flexibility for addressing unforeseen forms of use and trafficking, and possibly other needed limitations. Courts are authorized to define additional forms of use, traffic, and limitation when two conditions are met. First, the addition must be *ejusdem generis* with the existing use, traffic, or limitation elements of the system. Second, the addition must be necessary to avoid defeat of the statutory purposes and policies of the Act.

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of patents, trademarks, or anything else, without exceeding critical mass and fissioning.

[313] The interests are essentially the same as those of the ordinary patent system. Software progress is stimulated by providing economic rewards to encourage those who publicly disclose, via the software abstraction rights system, technical advances in algorithms and other software abstractions. Similarly, encouragement of commercialization in trade and commerce, of such technical advances, is an interest of the system.

so in a way and to an extent unavailable to traditional intellectual property legislation.

A third factor is material. The methodology of defining infringement broadly and then carving out exceptions, privileges, and limitations, which the copyright statute conspicuously features and which this proposal imitates, has considerable advantages in flexibility. This approach permits the law to impose special limitations on some kinds of rights without curtailing the generality of the concept of infringement that applies to all other kinds of rights. Thus, copyright law has a long catalogue of specific limitations on the general definition of infringement, which separately apply to only particular kinds of protected work, as well as general limitations that apply to all copyright-protected works.[305] For example, special limitations apply to rights in television broadcasts.[306] Rights against pictures of commercial, useful articles are specially limited.[307] Special limitations exist on rights to musical works.[308] Computer programs are subject to special limitations on rights.[309] Architectural works embodied in buildings may be photographed, modified, and destroyed, unlike other comparable works.[310]

Borrowing this expedient of selective limitation from copyright law permits a law on rights in software abstractions to apply a general standard of infringement to many different kinds of software abstraction, while tailoring the law to any particular kind of software abstraction and its special business needs, if any, by means of special limitations applicable only to it. Assume, for example, that computer programming languages call for special treatment because they can become de facto standards (as C may have done, at least for a time), and therefore additional limitations on rights in such languages are needed to protect users and the general public. If that were true, a standardization-tolerating limitation applicable to languages,

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[305] Fair use, for example, applies to all works. *See* 17 U.S.C. § 107 (1994).

[306] *See id.* §§ 111–112.

[307] *Id.* § 113(c).

[308] *Id.* §§ 115–116.

[309] *Id.* § 117.

[310] *Id.* § 120.

other laws, and is a matter of indifference to this law. No need or rationale for uniformity of regulation (at least not under this Act) is apparent for non-qualifying restrictions. Not to supersede or preempt their regulation therefore represents the better view.

VI. A SINGLE CONCEPT OF INFRINGEMENT

The author has developed a theory of infringement of rights in software abstractions reflected in proposed statutory language for a portion of a proposed law that would provide a new form of intellectual property protection. The law is proposed for protection of algorithms and other computer-related abstractions such as methods of doing business and, at least potentially, computer programming languages and instruction sets.

The question may arise of how broadly across all intellectual property law can a concept of infringement meaningfully apply. In copyright law, two kinds of act—reproduction and distribution—essentially describe infringement,[301] although they are supplemented to a slight extent by several others.[302] Under copyright law a single concept of actionable likeness for infringement exists—for example, for music, pictures, and literary texts alike—despite the differences in character of these works. That single test is "substantial similarity." However, one may well conclude that this single test can be deployed so widely only because the copyright law concept of infringement is so amorphous that it is almost without specific content and relies on the standard of "I know it when I see it."[303] In regular patent law, the single concept of infringement is at least partially

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deceptive business practices, *see* Federal Trade Commission Act § 5, 15 U.S.C. § 45 (1994), and also violative of comparable state laws, see *supra* note 277.

[301] 17 U.S.C. §§ 106(1), (3) (1994). These clauses of section 106 respectively give copyright owners the right to exclude unauthorized persons from reproducing or distributing copies of protected works.

[302] *See id.* §§ 106(2), (4), (5). These clauses of section 106 make unauthorized preparation of a derivative work, and public performance and display of some kinds of work, acts of infringement. In addition, section 106A provides limited rights of artistic integrity for works of visual art. *Id.* § 106A.

[303] See *supra* notes 75, 204.

cannot be punished or compelled under any other state or federal law to do that which this statute provides they should not be obliged to do.

Where does that leave contract law? For one thing, it precludes damages relief against disobedient licensees and customers under contract law. Any damages would have to be for infringement—the disobedient licensee or customer being an infringer if the restriction was reasonable and properly noticed, and if no other defense such as invalidity applied. What of other contract remedies, such as specific performance or termination? Clearly, any order of specific performance is the equivalent of a mandatory injunction requiring the disobedient licensee or customer to stop committing infringement (assuming again that the restriction was reasonable and properly noticed, and no defense applied). That should be preempted as duplicative of this Act, at best, and possibly conflicting with it. Termination may not be meaningful, for how would the terminating owner of rights enforce the termination? Any positive action, such as forcible repossession of software, would appear to be preempted.

On the other hand, negative actions such as refusal to maintain and update the software would appear not to be appropriately preempted. Therefore, if a disobedient licensee or customer sought to sue for breach of this, it would seem appropriate for the software proprietor to invoke the disobedience as justification for the proprietor's alleged breach in not maintaining and updating the software. So-called software time bombs, which disable software if triggered or if not timely cancelled, raise further questions of this kind. Should termination by time bomb, when a licensee or customer disobeys a restriction, be subject to federal regulation?[298]

[298] Time bombs raise other issues, such as consumer protection issues, besides those sparking the dispute between the software customer and the software vendor. If the customer uses the software to provide services for third parties, they may be injured when the time bomb goes off as a result of a dispute to which they are not a party and of which they have no knowledge. For example, a dry cleaner might have a customer clothing inventory system subject to a time bomb. The dry cleaner and the software vendor get into a dispute, the time bomb is triggered, and customers cannot get their suits back from the dry cleaner because the cleaner cannot retrieve them. Time bombs in the software of medical services providers might cause personal injury.

unreasonable to sell a product to A without restrictive notice, and then send letters of notice to A's potential customers to impose restrictions on them. That would deprive A of at least some of the economic value of A's purchase, if the tactic were legally effective.

5. Occupation Of Field

Subsection (f) provides that proposed section 1015 fully occupies the field of legal regulation of restrictive notices on products subject to software abstraction rights. Hence, liability, if any, under the present Act for disobeying a restrictive notice is exclusive of any other liability for the conduct under any other law. The present statute is intended to strike a congressionally determined balance of interests in this field, and leave no room for conflicting, cumulative, supplementing, or alternative liability under other federal or state laws. Cumulative state regulation—for example, under contract or tort law—could undermine the regulatory scheme which this legislation provides, by striking a different balance of interests,[296] and in any case it would interfere with national uniformity of regulation, which the software industry needs. Therefore, while other aspects of supersession and preemption are outside the scope of this article, section 1015 is a special case; unless it fully occupies the field, the section will not operate effectively and accomplish its legislative purpose.

Three aspects of supersession and preemption are considered: total immunization of statutorily authorized restrictions; total unenforceability of statutorily unauthorized restrictions; and liability for statutorily unauthorized restrictions. First, it is clear that proposed section 1015 has as a purpose allowing restrictions that qualify under the section. That section allows owners of rights in software abstractions to invoke the Act to compel customers to obey reasonable, adequately noticed restrictions. Hence, such restrictions should be in all ways immune from the operation of any other laws that would impair accomplishing the statutory purpose. Subsection (f) immunizes owners of these rights, licensees, and customers from liability under any state or federal law for agreeing or yielding to, or imposing, a

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[296] Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 152, 9 U.S.P.Q.2d (BNA) 1847, 1852 (1989); *see also* Pro CD, Inc. v. Zeidenberg, 908 F. Supp. 640 (W.D. Wisc. 1966), *rev'd*, 86 F.3d 1447 (7th Cir. 1996) (discussing copyright preemption issues that would be raised if the U.C.C. were amended to make shrink-wrap licenses enforceable against software customers).

competition in some other market, outside the scope of the software abstraction rights,[289] and that does not in fact occur.[290]

Third, the limitation or restriction must not "violate any specific prohibition imposed by federal statute or other positive law, or the stated policies of this law." The specific prohibitions of law most likely to be relevant are the judicially evolved per se rules against price fixing, group boycotts, customer and product allocations among competitors, and certain anticompetitive tie-ins.[291] The "stated policies of this law" are those expressly stated in the preliminary sections of the proposed Act, setting forth the legislative purposes,[292] and those implicit or explicit in specific sections of the statute—for example, the privilege of fair use in classroom teaching.[293] Often, perhaps usually, a restriction violative of such positive law will also fail to meet the requirements of paragraphs (c)(1) and (2).

U.S. Dept. of Justice and FTC, *Antitrust Guidelines for the Licensing and Acquisition of Intellectual Property*, example 7 (Apr. 6, 1995), *reprinted in* Trade Reg. Rep. (CCH) ¶ 13,132 (1995). The scope and duration of the exclusivity must not, however, violate paragraph (c)(1) of proposed section 1015.

[289] This is an "ancillarity" requirement. Rights in a spell-check algorithm should not be used to restrain competition in the sale of video games, at least in terms of invoking infringement sanctions as a coercive device. *See* Carbice Corp. v. American Patents Dev. Corp., 283 U.S. 27 (1931) (patent on container must not be used to restrain competition in sale of unpatented dry ice).

[290] *See, e.g.*, Summit Health, Ltd. v. Pinhas, 500 U.S. 322, 330 (1991); McLain v. Real Estate Bd., 444 U.S. 232, 243 (1980).

[291] *See, e.g.*, Jefferson Parish Hosp. Dist. v. Hyde, 466 U.S. 2, 26–29 (1984) (tie-in imposed by firm with market power); Hartford Empire Co. v. United States, 323 U.S. 386, 406–07 (1945) (allocation of product markets); Ethyl Gasoline Corp. v. United States, 309 U.S. 436, 457–59 (1940) (market regimentation); United States v. Krasnov, 143 F. Supp. 184, 202–03 (E.D. Pa. 1956) (equating licensee veto power to group boycott), *aff'd*, 355 U.S. 5 (1957) (per curiam).

[292] Proposed section 901, *supra* note 179.

[293] *Supra* text accompanying notes 255-57.

protected subject matter from the owner or its licensee.[284] Without such authorization, the customer's traffic in the product is an act of infringement. Traffic in violation of a restriction makes the trafficker an infringer and therefore liable to whatever sanctions the statute provides.[285] However, the defendant would be entitled to any defenses to infringement that are otherwise applicable, such as invalidity, estoppel, and laches.

3. Reasonableness

Subsection (c) defines reasonableness in terms of the "rule of reason" under the long-established doctrine of necessary and ancillary restraints.[286]

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[284] See proposed sections 1011 and 1012(a), and *supra* text accompanying notes 220-21, 229-30. Authorization vanishes only insofar as the customer violates a restriction, as illustrated in the following example. An owner of rights sells to customer C two units of a software product, A and B, embodying protected subject matter (for example, A and B are copies of a spreadsheet program using a protected algorithm) and the units are adequately labelled as to a restriction (for example, utilization only in C's own business and not for providing commercial accounting services to third parties). C utilizes products A and B for a year by executing the software in C's own computers, without disobeying the restriction. Then C violates the restriction only with unit A, for six months, and then C stops violating the restriction. C utilizes A and B subsequently without violating the restriction. C's traffic (utilization) was unauthorized, and thus infringing, only as to unit A, and only for the six-month period when C disobeyed the notice.

[285] Proposed section 1015 does not address restrictions on programmers' use of protected abstractions in writing computer programs. Thus, section 1003 provides that using a protected algorithm in preparing a computer program is a potentially infringing use. An owner of rights might want to license programmers to use a protected algorithm only in certain kinds of programs and not others—for example, for inventory programs customized for the automotive parts business only and not for department stores.

It is unclear whether such restrictions would be sufficiently more intrusive or potentially hindering to computer programming progress as to warrant different legal treatment than restrictions on trafficking. Perhaps it is not necessary to attempt to solve all problems at one time.

[286] *See* United States v. Addyston Pipe Co., 85 F. 271 (6th Cir. 1898), *aff'd*, 175 U.S. 211 (1899).

embodying the protected subject matter. The meanings of "reasonable" and "adequate" are provided in subsequent subsections.

This provision does not apply to consumer end users, that is, to members of the general consuming public. There is little to be gained from trying to enforce restrictions against consumers, for it is administratively infeasible to enforce restrictions against them and likely to provoke antagonism. Moreover, proposing a statute purporting to do so would create opposition to the proposal from consumer advocates. Finally, to the extent that such a law would require preemption of state consumer protection laws,[277] it would generate further hostility and difficulties.

This section changes what may be considered black-letter substantive law. In the past, the Supreme Court has generally held notices ineffective to create patent or copyright liability on the part of customers who disobey the notices.[278] In contrast, the Supreme Court has upheld limitations on the scope of licenses to licensees such as manufacturers (not sales to customers), when the Court considered the limitations reasonable, and has struck them down when it considered them unreasonable.[279] The Supreme Court and lower courts have usually treated sellers' restrictions on customers' use of patented products much more strictly than licensors' limitations on the scope of licenses, even where the restrictions and limitations were

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[277] Many state laws prohibit unfair acts and practices, as well as deceptive practices, against consumers. *See* Jack E. Karns, *State Regulation of Deceptive Trade Practices Under "Little FTC Acts": Should Federal Standards Control?*, 94 DICK. L. REV. 373 (1990); Michael C. Gilleran and L. Seth Stadfield, *Little FTC Acts Emerge in Business Litigation*, 72 A.B.A. J. 58 (1986).

[278] *See* United States v. General Elec. Co., 272 U.S. 476 (1926); Bobbs-Merrill Co. v. Straus, 210 U.S. 339 (1908).

[279] *See* Hartford Empire Co. v. United States, 323 U.S. 386 (1945) (use limitations/restrictions effecting horizontal allocation of bottle and jar markets violated Sherman Act); Ethyl Gasoline Corp. v. United States, 309 U.S. 436 (1940) (use limitations/restrictions effecting price fix violated Sherman Act); United States v. General Elec. Co., 272 U.S. 476 (1926) (distinguishing price fix effected by customer restriction from one effected by limitation in manufacturing license). *See also* General Talking Pictures Corp. v. Western Elec. Co., 304 U.S. 175, *modified*, 305 U.S. 124 (1938) (limitation in manufacturing license presumed lawful).

the scheme of the proposed legislation. The following section 1015[276] was written as a separate module to emphasize its severability.

> **§ 1015. Effective notices of restrictions**
>
> (a) Notwithstanding section 1012(a), an owner of rights in a software abstraction may by use of adequate notice impose or cause to be imposed on a direct or indirect customer, other than a consumer end user, a reasonable limitation or restriction on the customer's trafficking in a product embodying the protected software abstraction.
>
> (b) A person who intentionally disobeys a limitation or restriction described in subsection (a) is not authorized to traffic in the product to which the limitation or restriction applies, insofar as such traffic goes beyond such limitation or restriction. Any such unauthorized trafficking is an act of infringement in violation of section 1001.
>
> (c) A limitation or restriction is reasonable, for purposes of this section, if and only if each of the following conditions is satisfied:
>
> (1) the limitation or restriction is designed and intended to overcome one or more obstacles to marketing embodiments of the protected software abstraction or otherwise commercially exploiting it, and is not substantially greater in scope or duration than is necessary to do so;
>
> (2) those persons responsible for the limitation or restriction do not intend that it shall, and its actual and probable effect is not to, lessen

[276] This provision is generally similar to a proposal of broader scope by the author to amend the regular patent laws to permit imposition of use restrictions on patented products. Richard H. Stern, *Post-Sale Restrictions After Mallinckrodt—An Idea in Search of Definition*, 5 ALB. L.J. SCI. & TECH. 1, 39–40 (1994) [hereinafter *Post-Sale Restrictions*]. That proposal addresses consensual restrictive agreements as well as restrictive notices, and it covers both licenses and sales.

Whether a restriction on a customer's use of a product should be effective ought to depend on the character of the restriction and the reasons why it was imposed, not on the manipulable format of the transaction.[273]

Accordingly, proposed section 1014 provides that designations of transactions having the characteristics of sales as something else (such as licenses) are not legally effective to counteract the effect of the exhaustion doctrine of proposed section 1012(a). This section applies to copies of computer programs and to any machines or devices, such as microwave ovens or cars, containing programmed microprocessor chips or otherwise embodying protected software abstractions.

> **§ 1014. Ineffective notices**
>
> Notices and other writings are ineffective, under any law, that purport to declare that distribution to the public of copies of a computer program, machines, or devices embodying a protected software abstraction was not a distribution, that transactions otherwise having the characteristics of sales of such copies, machines, or devices were licenses rather than sales, or that title to such copies, machines, or devices was retained or withheld despite occurrence of transactions otherwise having

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On the other hand, the Ninth Circuit has analyzed the legal effect of a sale of computer equipment coupled with a so-called license to use copyrighted software (including the built-in BIOS software used to boot up the computer) furnished with the computer, and held that limitations in the alleged software license were effective to make it copyright infringement for unauthorized persons (rival providers of repair services) to boot up the computer. MAI Sys. Corp. v. Peak Computer, Inc., 991 F.2d 511 (9th Cir. 1993), *cert. dismissed*, 114 S. Ct. 671 (1994). Under this theory, GM could sell cars with computerized ignition and braking systems, and make it copyright infringement for customers to have those parts of their cars repaired or serviced by anyone but GM dealers. *But see* British Leyland Motor Corp. v. Armstrong Patents Co., [1986] 1 App. Cas. 577, [1986] 1 All E.R. 852 (H.L. 1986) (copyright law cannot be used to require car owners to buy copyrighted spare parts from copyright owner, because that is inconsistent with the law of personal property).

[273] United States v. Masonite Corp., 316 U.S. 265, 278, 280 (1942).

(unenforceable),[268] because the Uniform Commercial Code does not permit a seller to vary contract terms unilaterally.[269]

There are other enforceability issues, including privity of contract, adhesiveness, unconscionability, the contra proferentum rule, effective meeting of minds and consent, and "Plain English" and other state consumer protection laws.[270] For these reasons, inaction will not promote security of business expectation in this field, for whether and to what extent these shrink-wrap restrictions will be enforced is highly unpredictable.

Another option would be to provide that state law shall govern the lawfulness and enforceability of restrictive notices accompanying computer programs that embody protected subject matter. That would overrule the

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[268] Step-Saver Data Sys., Inc. v. Wyse Technology, 939 F.2d 91, 94, 96–97 (3d Cir. 1991); *see also* Arizona Retail Sys., Inc. v. Software Link, 831 F. Supp. 759 (D. Ariz. 1993) (holding shrink wrap license unenforceable when software delivered after telephone agreement, but enforceable in absence of prior agreement).

[269] U.C.C. § 2–207(2)(b) (1982). It has been proposed, however, to amend the U.C.C. to make shrink-wrap licenses legally effective against purchasers of software. *See* Pro CD, Inc. v. Zeidenberg, 908 F. Supp. 640, 656 (W.D. Wisc. 1996) (discussing proposed U.C.C. § 1–2203), *rev'd*, 86 F.3d 1447 (7th Cir. 1996); *see also* Ronald J. Palenski, *Falling Through the Net*, LEGAL TIMES, Apr. 8, 1966, at 27, 28.

The latest draft of U.C.C. REV. ART. 2B § 2B–308(b) (Draft of Apr. 2, 1996) provides that the terms of shrink-wrap licenses are enforceable unless they impose limitations or obligations "not consistent with customary industry practices" that "a reasonable licensor would know would cause an ordinary and reasonable licensee to refuse the license if the term were brought to the attention of the licensee." The Reporters Notes state that this section "reverses" *Wyse Technology*. *Id.* n.10. The Reporter also questions the correctness of *Pro CD* and comments that "this court is the first to hold that a contract is preempted by a statute creating property rights and which expressly preempts only governmental action." *Id.* n.19. *But see* Lear, Inc. v. Adkins, 395 U.S. 653, 674, 162 U.S.P.Q. (BNA) 1, 10 (1969) (holding that federal patent law preempts state contract law doctrine of licensee estoppel); *cf.* Sola Elec. Co. v. Jefferson Elec. Co., 317 U.S. 173, 176–77, 55 U.S.P.Q. (BNA) 379, 381 (1942) (holding that federal antitrust law preempts state contract law as to patent licensee estoppel).

[270] *See* 1 RAYSMAN AND BROWN, *supra* note 263, § 7.11A[2]; THE LAW AND BUSINESS OF COMPUTER SOFTWARE, *supra* note 263, § 13.03.

V. NOTICE AND AUTHORIZATION

For at least a century, owners of intellectual property rights in the United States have attempted to limit how their customers used varied products covered to some extent by intellectual property rights; typically, the intellectual property owner would place a notice on the product, instructing the customer what could or must not be done.[262] There are several kinds of legal controversy into which these efforts have led these intellectual property owners and their customers, only one of which this article will address. The issue to be addressed is whether a customer's disobedience to a use restriction in a label on a product is an unauthorized use and thus an infringement.

Because software is often mass-marketed, label licensing (so-called shrink-wrap licensing) is a popular expedient for proprietors of software rights.[263] The question therefore arises—to what extent should label

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because of the plaintiff's failure to assert its rights in a timely fashion, and it has no special relationship to the nature of the right involved. Accordingly, it is considered sufficient simply to place elsewhere in the proposed legislation, among the sections concerning enforcement of rights against infringers, a section on defenses, providing:

> § ____. **Defenses, in general**
> Invalidity, estoppel, laches, limitations, license, abandonment, misuse, and fraud or inequitable conduct in procurement are affirmative defenses. They must be so pleaded and proved. Nothing contained in this section in any way impairs any other legal or equitable defense recognized in civil actions.

[262] *See, e.g.*, Adams v. Burke, 84 U.S. (17 Wall.) 452 (1873) (territorial use of patented coffin lid); Bobbs-Merrill Co. v. Straus, 210 U.S. 339 (1908) (resale price of copyrighted book); Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502 (1917) (use restrictions on patented film projection machine).

[263] Such copyright licenses have been termed "shrink wrap" and "box top" licenses in the computer program field. *See, e.g.*, Step-Saver Data Sys., Inc. v. Wyse Technology, 939 F.2d 91, 94, 96–97 (3d Cir. 1991); 1 RICHARD RAYSMAN AND PETER BROWN, COMPUTER LAW: DRAFTING AND NEGOTIATING FORMS AND AGREEMENTS § 7.11A (1993); Richard H. Stern, *Shrink-Wrap Licenses of Mass Marketed Software, in* THE LAW AND BUSINESS OF COMPUTER SOFTWARE §§ 13.01–13.07 (D.C. Toedt III ed., 1993). For an example of a

is nonstatutory subject matter. Second, patent law's philosophical use exemption[254] and copyright law's fair use privilege[255] would probably immunize the conduct. On the other hand, the breadth of the first sentence of subsection (f) may make any concern over rebutting the presumption in any true (bona fide) classroom setting purely academic.

There are other fair uses of protected subject matter, recognized under intellectual property law, and they are not all codified here. That would be impracticable, for they are too numerous. An example of additional fair use would be fair use in truthful advertising, for example, a television demonstration of two competitive computer programs using different sorting algorithms, to show that the advertiser's algorithm is faster;[256] or a demonstration of one program (containing protected subject matter) with an add-on program, in order to show that the add-on actually works with the other program as claimed.[257]

C. *Additional Limitations*

Just as it was appropriate in section 1005 to permit courts to find additional kinds of conduct to be use or trafficking, it is appropriate to permit them similarly to find additional kinds of conduct to be exempted or privileged. Many or perhaps most of the exceptions and limitations to

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[254] Roche Prods., Inc. v. Bolar Pharmaceutical Co., 733 F.2d 858, 862, 221 U.S.P.Q. (BNA) 937, 940 (Fed. Cir.), *cert. denied*, 469 U.S. 856 (1984). Additionally, classroom use is unlikely to involve any making, using, or selling of the subject matter. Hence 35 U.S.C. § 271(a) (1994) is not implicated. Could such classroom use be active inducement to use the subject matter, implicating 35 U.S.C. § 271(b)? That is arguable, but nonetheless doubtful.

[255] 17 U.S.C. § 107 (1994) ("teaching" specifically mentioned in preamble).

[256] *See* Kaz Mfg. Co. v. Chesebrough-Ponds, Inc., 317 F.2d 679, 137 U.S.P.Q. (BNA) 598 (2d Cir.) (holding competitive demonstration of vaporizers not patent infringement), *cert. denied*, 375 U.S. 905 (1963).

[257] *See* American–Marietta Co. v. Krigsman, 275 F.2d 287, 124 U.S.P.Q. (BNA) 320 (2d Cir. 1960) (mop refills may be truthfully designated in terms of brand that refills fit, without liability for unfair competition); *see also* Champion Spark Plug Co. v. Sanders, 331 U.S. 125, 73 U.S.P.Q. (BNA) 133 (1947) (reconditioned brand name spark plugs may truthfully be described as such).

The provisions of proposed subsection (e) call for a different result than would appear to occur under the PTO's software patent guidelines. The first sentence of subsection (e) gives a very broad exemption to purely educational reverse engineering, when it occurs without any subsequent conduct. Reverse engineering for the purpose of gaining knowledge, and not associated with any other conduct, is entirely exempted.

When subsequent conduct occurs, involving commercial use of the results of such reverse engineering (for example, using an algorithm learned by reverse engineering, in order to prepare another computer program), the second and third sentences of subsection (e) come into play. When reverse engineering is followed by preparation of a further program or another product and/or by distribution or commercial use of such a program or product, the conduct is exempt "unless trafficking in the program or product would be infringement even without occurrence of the preceding analysis or evaluation of the subject matter." If the reverse engineer's resulting commercial program or product does not itself contain any protected material, there is no infringement. Thus, if study of an instruction set, data structure, or algorithm leads to the preparation of a product or program whose instruction set, data structure, or algorithm is sufficiently different from the original as not to be infringing, the fact that the product or program is the result of reverse engineering will not, by itself, lead to infringement liability. On the other hand, if the subsequent product embodies the protected instruction set, data structure, or algorithm, the product will be held infringing. But the finding of infringement comes from what the product is, not from the history of how it came to be.[251] There is no doctrine of the fruit of the poisoned tree here. It is believed that this approach to reverse engineering is more in keeping with the mores of the software community and the electronics industry than is the apparently less permissive approach of the software patent guidelines.

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be true, however, for a comparable statute amending existing law. If Congress for some reason wanted to abolish reverse engineering, it would have the power to do so. The PTO's authority is more limited. *See* United States *ex. rel* Steinmetz v. Allen, 194 U.S. 543 (1904) (discussed *supra* note 19).

[251] See *supra* note 238 and accompanying text. The test adopted here is essentially that of the *NEC–Intel* case, discussed *supra* note 238 and accompanying text, not that of the *Sega* case, discussed *supra* note 239 and accompanying text.

rather than constituting mere piratical copying. It is thus seen that subsection (e) of section 1012 is intermediate between the respective approaches of the SCPA and the most recent copyright decisions.

There are no significant reverse engineering patent law decisions, thus far, because reverse engineering is ordinarily permitted or even encouraged under patent law.[242] Reverse engineering can be controversial under copyright law, because the process typically involves reproduction of copies of a computer program and perhaps also preparation of derivative works based on the copyrighted original computer program work, which (unless privileged) are acts of copyright infringement.[243] When a computer program, algorithm, or other software abstraction is protected by a patent on a machine system or process operating in accordance with the software abstraction,[244] reverse engineering the computer program does not typically involve making, using, or selling any patented invention to any extent beyond the broad, privileged right of use that a purchaser of a patented product enjoys.[245] Hence, such reverse engineering is not controversial under patent law.

This could change greatly under the new guidelines for software patents,[246] however, because they propose to allow patents, in some form, on algorithms and other abstractions, when they are embodied in a storage medium such as a floppy or hard disk. The process of reverse engineering

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[242] *Cf.* Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 160, 9 U.S.P.Q.2d (BNA) 1847, 1856 (1989) ("Reverse engineering of chemical and mechanical articles in the public domain often leads to significant advances in technology."); Kewanee Oil Co. v. Bicron Corp., 417 U.S. 470, 476 181 U.S.P.Q. (BNA) 673, 676 (1974) (reverse engineering is "fair and honest means" of discovering trade secret).

[243] *See Sega*, 977 F.2d at 1525. 24 U.S.P.Q.2d (BNA) at 1573; Lewis Galoob Toys, Inc. v. Nintendo of Am., Inc., 964 F.2d 965, 969, 22 U.S.P.Q.2d (BNA) 1857, 1860 (9th Cir. 1992), *cert. denied*, 113 S. Ct. 1582 (1993).

[244] *See In re* Alappat, 33 F.3d 1526, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994); *In re* Schrader, 22 F.3d 290, 30 U.S.P.Q.2d (BNA) 1455 (Fed. Cir. 1994).

[245] *Aro II*, 377 U.S. at 484, 141 U.S.P.Q.2d (BNA) at 685.

[246] See *supra* note 17 and accompanying text.

3. Debugging

Subsection (c) permits debugging of a person's copies of computer programs. This is a possible omission in present copyright law,[232] but patent law probably recognizes such rights.[233] A reseller may also debug a product to be resold, according to the final clause of the subsection, where there is no piracy.[234]

4. Adaptation

Subsection (d) authorizes adaptation, following recent authority interpreting section 117 of the copyright law.[235] This provision does not follow an earlier, more limiting interpretation of section 117 adopted by some other lower courts.[236] Thus, this proposed subsection would permit a lawful owner of a BIOS program to transfer it from diskette to EPROM, to improve the owner's convenience of use. It also permits users to rely on skilled persons in the business of mass-market adaptation, instead of being

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[232] Arguably, section 117's adaptation right permits debugging, *see* 17 U.S.C. § 117 (1994), but no decision so holds.

[233] *See* Wilbur-Ellis Co. v. Kuther, 377 U.S. 422, 141 U.S.P.Q. (BNA) 703 (1964) (recognizing nonstatutory right to modify patented machine to make it work more satisfactorily for its owner). Such a right to correct defects might also be inferred from the nonstatutory right of a purchaser of a patented product to make repairs. *See Aro I*, 365 U.S. at 342-43, 128 U.S.P.Q. (BNA) at 358 (holding that repair right exists).

[234] This might be done by buying copies of the computer program and reselling debugged versions, on a one–for–one basis, so that the owner of rights receives full compensation for each debugged copy sold. Alternatively, debugged copies might be furnished to persons who have already bought bug–containing ("buggy") copies from the owner of rights or its licensee.

[235] 17 U.S.C. § 117 (1994); *see* Aymes v. Bonelli, 47 F.3d 23, 33 U.S.P.Q.2d (BNA) 1768 (2d Cir. 1995); Foresight Resources Corp. v. Pfortmiller, 719 F. Supp. 1006, 13 U.S.P.Q.2d 1721 (D. Kan. 1989).

[236] *See Pfortmiller*, 719 F. Supp. at 1009–10, 13 U.S.P.Q.2d (BNA) at 1723 (collecting authorities).

progress in software technology and furtherance of allocative efficiency. For the law to decree constructive authorization of these privileges reflects public policy in a way similar to the reflection of public policy seen when the law implies a constructive promise in the name of quasi-contract.[226] The Fourth Circuit has recently attempted to articulate a general theory of quasi-contract and unjust enrichment based on public policy, which resonates here. In *Provident Life & Accident Ins. Co. v. Waller*,[227] the court characterized the "archetypal unjust enrichment scenario" as being satisfied if any one or more of the following factors was present: the plaintiff had a reasonable expectation of payment, the defendant should reasonably have expected to pay, or society's reasonable expectations regarding person and property would be defeated by nonpayment.[228] Each of these factors can be translated into the context of implied authorization. The third of them, so translated, is particularly significant in the present context.

1. Exhaustion Doctrine

The exhaustion doctrine or first sale rule is set out in subsection (a) of proposed section 1012. A purchaser or other person to whom a copy of a computer program is lawfully distributed is entitled to use it and resell it, without limitation except as otherwise specifically provided in the statute. As stated in 1984 in the House Report on the Semiconductor Chip Protection Act:[229]

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[226] See *supra* note 224.

[227] 906 F.2d 985 (4th Cir. 1990). The court stated that it was attempting to "fashion[ ] a federal common law rule of unjust enrichment" under the federal ERISA statute, 29 U.S.C. § 1144(a). *Id.* at 993; *see also id.* at 989–90 n.7. The reader will perceive the parallel between labor law's directive to the federal courts to develop a federal common law and the more narrow authorization of this legislation to federal courts to develop additional forms of use, traffic, and limitation, if that is necessary to effectuate the statutory purpose and satisfies the rule of *ejusdem generis*.

[228] *Id.* at 993–94. The concept is borrowed from CORBIN, *supra* note 224, § 19A, at 50 (Supp. 1989).

[229] H.R. REP. NO. 98-781, 98th Cong., 2d Sess., 23 (citations omitted). *See Aro II*, 377 U.S. at 484, 141 U.S.P.Q. (BNA) at 685 ("it is fundamental that sale of a patented article by the patentee or under his authority carries with it an 'implied license to use'").

predictability and certainty of expectation. More specific language is needed to supplement section 1011, which the following proposed section 1012 provides:

> **§ 1012. Particular authorized and exempted acts**
>
> Notwithstanding sections 1001 through 1004 [the previous provisions describing infringing use and trafficking]:
>
> (a) EXHAUSTION DOCTRINE.—Except as otherwise expressly provided in this Act, it is not infringement for a person to traffic in an embodiment of protected subject matter if the owner of rights, or anyone authorized by the owner to distribute the embodiment, directly or indirectly sold or otherwise transferred possession of the embodiment to the person.
>
> (b) ARCHIVAL USE.—It is not infringement for a person to whom a copy of a computer program embodying protected subject matter has been distributed to reproduce the copy in the same or another medium, without distribution, as a safeguard against its loss, damage, or destruction.
>
> (c) DEBUGGING.—It is not infringement for a person to debug a computer program embodying protected subject matter, where the person does not knowingly cause distribution of debugged copies to persons not in lawful possession of copies of the computer program.
>
> (d) ADAPTATION.—It is not infringement for a person to enhance or otherwise modify a computer program embodying protected subject matter or encode it in a different medium, for the use of persons in lawful possession of copies thereof, where such person does not knowingly cause distribution of modified copies to persons not in lawful possession of copies thereof.
>
> (e) RESEARCH, REVERSE ENGINEERING. —It is not infringement for a person to use, or traffic in an embodiment of, protected subject matter solely for the purpose of teaching, analyzing, or evaluating

indicated that the customers should reasonably have different expectations.[222]

To some extent, authorization by implication necessarily overlaps the common law doctrine of estoppel by conduct or equitable estoppel. For example, consider the notional case of an operating system software vendor Nanosoft, who licenses a computer seller Dummypal to preload copies of Nanosoft's operating system software (NS-DOS) onto the hard disks of the computers that Dummypal sells. Dummypal builds its computer business entirely around the concept of "Computers for Dummies," that is, computers for people who are very stupid or at least are very computer illiterate. The concept involves preloading another program, "YourPal," onto the hard disk; YourPal cooperates with the preloaded Nanosoft NS-DOS operating system software to make it easier for persons who are not computer literate to use the computer. YourPal is a voice-driven "shell" program that makes it possible to run a computer without understanding commands or even how to use a mouse. We may assume that YourPal cooperates with NS-DOS in a way that, if unauthorized, infringes the legal rights of Nanosoft in its operating system software.[223]

After this arrangement continues for some years, during which Nanosoft collects millions of dollars in royalties from Dummypal, Nanosoft decides to do something to dumb down its own operating system software.

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[222] For example, a notice might provide that the customer must make separate, commercial-use payments for embodying routines coded into the compiler into sold copies of compiled programs. The notice may be effective in establishing different reasonable expectations. Notices are discussed *infra* part V.

[223] For example, the interaction between NS-DOS and YourPal causes preparation of a derivative work version of NS-DOS, at least in the computer's memory. *See* Lewis Galoob Toys, Inc. v. Nintendo of Am., Inc., 964 F.2d 965, 22 U.S.P.Q.2d (BNA) 1857 (9th Cir. 1992), *cert. denied*, 113 S. Ct. 1582 (1993). This is probably an infringement, because the prohibition of unauthorized preparation of a derivative work does not require any reproduction of a copy. *See* 17 U.S.C. § 102(2) (1994). Thus, a pantomimed derivative work never reduced to tangible form can nonetheless be a copyright infringement under section 106(2). Furthermore, some courts consider even a "copy" in volatile memory (e.g., RAM) to be enough of a copy to violate section 106(1)'s prohibition of unauthorized reproduction. *See, e.g.*, MAI Systems Corp. v. Peak Computer, Inc., 991 F.2d 511, 26 U.S.P.Q.2d (BNA) 1458 (9th Cir. 1993), *cert. dismissed*, 114 S. Ct. 671 (1994).

determining actionable similarity in any subsequent infringement dispute. On the other hand, the drafting of peripheral claims and their administrative examination is expensive and time-consuming. Such a requirement therefore adds to the front-end costs of securing intellectual property protection for software abstractions.[217] Yet, rapid, inexpensive attachment of legal protection is a goal of this kind of system, or should be.

The issue of how difficult it will be to determine actionable similarity when use, or trafficking in an embodiment, of a software abstraction is challenged thus depends on resolution of a question outside the scope of this article—the question of how owners of these rights will establish their entitlement to the rights. Resolving that issue will require that a trade-off be made between conflicting interests—certainty, predictability, and security of expectation, on the one hand, and minimization of front-end costs, on the other hand.[218]

IV. LIMITATIONS AND EXEMPTIONS

Infringement can be defined only partly by what it generally is, as sections 1001 to 1005 did. Infringement must also be defined in terms of what it specifically is not. That is the basic pattern of the copyright statute, which defines a copyright owner's rights in section 106 in terms of what the copyright owner may generally prevent other persons from doing to, with, or in relation to the copyright owner's work. Then, a great many limiting sections of the copyright act follow, beginning with section 107's description of fair use, which describe what is carved out from section 106 and qualify both the copyright owner's rights and the statutory definition of

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[217] Software start-up companies may be particularly unable to sustain front-end costs, and yet intellectual property protection may be important to their obtaining capital.

[218] A possible compromise would be to allow applicants to elect whether to submit a single central claim or a series of peripheral claims. Thus an applicant desiring to avoid expense might simply wish to describe a software advance in an enabling disclosure and claim it, "substantially as described." The scope of rights then would be limited to the entire described subject matter, regarded as a combination, except for insubstantial and immaterial variations.

a software abstraction, the task of determining actionable similarity is lessened in any subsequent infringement controversy. Such a "metes and bounds" claim—a so-called peripheral claim[209]—directed to an algorithm is like one directed to a patented process,[210] and lends itself to the same legal analysis.[211] A peripheral claim can also be drafted for a data structure, in a

[209] A peripheral claim defines the scope of a patent in terms of a described combination of elements or steps, claimed as comprising elements or steps A+B+C, related to one another in a designated way. An accused device or process infringes such a claim only if the accused device or process has each of elements or steps A, B, and C, or their equivalents, related to one another as described in the claim. Thus A+B does not infringe such a claim to A+B+C. *See Aro I*, 365 U.S. at 336, 128 U.S.P.Q. (BNA) at 154; General Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1274, 23 U.S.P.Q.2d (BNA) 1839, 1840 (Fed. Cir. 1992); Environmental Instruments, Inc. v. Sutron Corp., 877 F.2d 1561, 1564, 11 U.S.P.Q.2d (BNA) 1132, 1134 (Fed. Cir. 1989). However, A+B+C+D ordinarily does infringe such a claim to A+B+C. Shamrock Technologies, Inc. v. Medical Sterilization, Inc., 903 F.2d 789, 793, 14 U.S.P.Q.2d (BNA) 1728, 1732 (Fed. Cir. 1990); Uniroyal, Inc. v. Rudkin–Wiley Corp., 837 F.2d 1044, 1056, 5 U.S.P.Q.2d (BNA) 1434, 1442–43 (Fed. Cir.), *cert. denied*, 488 U.S. 825 (1988).

[210] For examples of claims directed to algorithms that resemble claims directed to processes, see *Benson*, 409 U.S. at 73–74, 175 U.S.P.Q. (BNA) at 677; *Trovato*, 42 F.3d at 1377–79, 33 U.S.P.Q.2d (BNA) at 1195–96; *In re* Warmerdam, 33 F.3d 1354, 1357–58, 31 U.S.P.Q.2d (BNA) 1754, 1756–57 (Fed. Cir. 1994).

[211] For example, all of the steps of the claimed, patented process, or their equivalents, must be present. Goodwall Const. Co. v. Beers Const. Co., 991 F.2d 751, 758, 26 U.S.P.Q.2d (BNA) 1420, 1426 (Fed. Cir. 1993); Standard Oil Co. v. American Cyanamid Co., 774 F.2d 448, 452–53, 227 U.S.P.Q. (BNA) 293, 295–97 (Fed. Cir. 1985). However, some transposition of steps will probably not avoid infringement unless the modification affects operation significantly. Procter & Gamble Mfg. Co. v. Refining, Inc., 135 F.2d 900, 909, 57 U.S.P.Q. (BNA) 505, 514 (4th Cir. 1943); Matherson–Selig Co. v. Carl Gorr Color Gard, Inc., 301 F. Supp. 336, 349, 154 U.S.P.Q. (BNA) 265, 276 (N.D. Ill. 1967); Angle v. Richardson, 19 F. Supp. 1002, 1008–09, 34 U.S.P.Q. (BNA) 205, 212–13 (S.D. Cal. 1937), *rev'd on other grounds*, 97 F.2d 736 (9th Cir. 1938); Matrix Contrast Corp. v. Kellar, 34 F.2d 510, 512–13, 2 U.S.P.Q. (BNA) 400, 403 (E.D.N.Y. 1929).

enough to amount to an unlawful appropriation of the copyright owner's work, is the taking copyright infringement.[205]

Patent law, of course has claims to help define infringement. Typically, patent claims cover particular combinations of elements or steps, including various limitations, and usually the invention will not work unless all of the claimed elements or steps or their substantial equivalents are present. If it does nonetheless work, the patentee will most likely lose any infringement suit.[206] An algorithm is more patent-like than copyright-like in this respect, and most closely resembles what patent law calls a process.[207] Some other software abstractions closely follow the process paradigm, while still others follow it less closely. Probably, a computerized method of doing business is on a par with an algorithm in this regard. A data structure, also,

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[205] Computer Assocs. Int'l, v. Altai, Inc., 982 F.2d 693, 710, 23 U.S.P.Q.2d (BNA) 1241, 1256 (2d Cir. 1992).

[206] For decisions addressing this issue, see *Aro I*, 365 U.S. at 336, 128 U.S.P.Q. (BNA) at 154; Dolly, Inc. v. Spalding & Evenflo Cos., 16 F.3d 394, 29 U.S.P.Q.2d (BNA) 1767 (Fed. Cir. 1994). *Aro I* highlights an essential difference between infringement of a patent and infringement of a copyright or trademark. One infringes a copyright or trademark by appropriating its gist, see *supra* note 75, thereby causing a substantial or confusing similarity. *Aro I* emphasizes that the invention claimed in a patent has no gist. It is exactly, no more and no less than, what the claims define. 365 U.S. at 344–45, 128 U.S.P.Q. (BNA) at 358-59 ("if anything is settled in the patent law, it is that the combination patent covers only the totality of the elements in the claim"; "there is no legally recognizable or protected essential element,' 'gist,' or 'heart' of the invention").

[207] 35 U.S.C. § 100(b) (1994). Each of the three Supreme Court decisions passing on whether algorithm–related subject matter was potentially patentable involved process claims. Diamond v. Diehr, 450 U.S. 175, 209 U.S.P.Q. (BNA) 1 (1981); Parker v. Flook, 437 U.S. 584, 198 U.S.P.Q. (BNA) 193 (1978); Gottschalk v. Benson, 409 U.S. 63, 175 U.S.P.Q. (BNA) 673 (1972). However, it is possible to rewrite any claim in process format into a claim in purported apparatus format by replacing the verb step elements of the claim with means for performing such steps, and in regard to algorithms the distinction is immaterial. *In re* Trovato, 42 F.3d 1376, 1382–83, 33 U.S.P.Q.2d (BNA) 1194, 1199–1200 (Fed. Cir. 1994), *vacated on other grounds*, 60 F.3d 807, 35 U.S.P.Q.2d (BNA) 1570 (Fed. Cir. 1995). *See also* In re Alappat, 33 F.3d 1526, 1542, 31 U.S.P.Q.2d 1545, 15 (Fed. Cir. 1994) (stating that doctrine against patents on algorithms, as such "applies equally whether an invention is claimed as an apparatus or process, because the form of the claim is often an exercise in drafting").

to manufacture, use, and distribution of machines or devices, such as microprocessor chips, that embody an instruction set or are configured in accordance with a given data structure. These things can be covered by adding to proposed section 1004 the language shown below in italics:

> **§ 1004. Trafficking in protected subject matter**
>
> A person traffics in an embodiment of a protected software abstraction within the meaning of section 1001 if, in respect of any computer program, *machine, or device* that implements or embodies the protected software abstraction, *or with respect to any machine or device configured in accordance with a protected data structure,* the person:
>
> (a) causes the computer program to be executed in a machine;
>
> (b) reproduces, distributes, or imports a copy of the computer program;
>
> (c) loads the computer program into a memory device, whether permanent or impermanent;
>
> (d) transmits the computer program among computers or information storage media; or
>
> *(e) makes, uses, distributes, or imports the configured machine or device.*

The words "make" and "use" in subsection (e) are intended to have the same meaning as in patent law. The copyright law word "distribute" is arbitrarily used in subsection (e) rather than the patent law word "sell." It would appear that either word could be used without making a substantial difference, although distribute is perhaps somewhat broader in scope.[201] The words "the configured machine or device" of subsection (e) have as their

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[201] A gift, loan, or rental is a distribution. *See* 17 U.S.C. § 106(3) (1994); National Car Rental Sys., Inc. v. Computer Assoc. Int'l, 991 F.2d 426, 430, 26 U.S.P.Q.2d (BNA) 1370, 1373 (8th Cir. 1993). Such conduct is not a sale for purposes of patent infringement. Cabot Corp. v. WGM Safety Corp., 562 F. Supp. 891, 892 (D. Mass. 1983) (holding that distribution of free samples is not sale). *But see* Thorn EMI N. Am., Inc. v. Micron Technology, Inc., 821 F. Supp. 272, 274–75 (D. Del. 1993) (holding that distribution of free samples is infringing use).

differently for yet other kinds of software abstractions. The concepts of use and trafficking may vary with subject matter. In copyright law, for example, one infringes different kinds of statutory subject matter in different ways. Thus, one can perform a play or musical work, but one cannot perform a pictorial or sculptural work;[197] one can display a pictorial or sculptural work, but not a musical or choreographic work.[198] If there were such a thing as a work of authorship appealing to the sense of smell (for example, a notional odor symphony), doubtless that would call for a further description of infringement. Likewise, recognition of culinary works of authorship would require us to develop still another ramification of infringement.[199] It should therefore be no surprise that section 1003, as set forth earlier, is not a "one size fits all" garment. It also emphasizes the importance of having some kind of escape hatch, such as proposed section 1005, to provide some flexibility.

It may therefore be appropriate to revise proposed section 1003 to cover instruction sets and data structures, by adding the language shown below in italics:

> **§ 1003. Use of protected subject matter**
>
> A person uses a protected software abstraction within the meaning of section 1001 if the person:

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[197] 17 U.S.C. § 106(4) (1994) expressly recognizes this. Further, one can use, but cannot make or sell, a patented process. See *supra* note 113.

[198] *See* 17 U.S.C. § 106(5) (1994). Nevertheless, this provision in terms refers to display of some works which cannot be displayed as such, although copies of the works might be displayed in some circumstances. Musical and literary works are included in section 106(5) as subject to the exclusive right of public display, but only *copies* of such works—not the *works* as such—could be displayed (for example, an autograph of a Mozart flute quartet). The works *as such* are incorporeal and thus incapable of display. To make matters even more confusing, section 109(c) permits owners of lawfully made copies (including the original) to display them publicly without express authorization. *Id.* § 109(c). Regardless of all of this imprecision and confusion, the point remains that different kinds of conduct must occur to infringe different kinds of work.

[199] *See* Cuisenaire v. Reed, [1963] V.R. 719, 736 (Austl. 1963) (stating that a rabbit pie does not infringingly reproduce the recipe in a cookbook for making the pie).

and it is then embodied and implemented in the code of the application program for which it was devised.

These acts of embodiment and implementation are not "use" of the given software abstractions, in the same sense that embodying an algorithm in a computer program by writing the program is a "use" of the algorithm. An instruction set is implemented in a microprocessor chip by designing circuitry to be embodied physically into the microprocessor, for example, as an array of gate circuitry within the microprocessor. Presumably, the design of the gate circuitry would be the "use" of the instruction set. By the same token, the subsequent manufacture, sale, and use of the microprocessor would be the trafficking. The embodiment, however, is not an embodiment in a computer program, as section 1003 prescribes. Rather, it is an embodiment in a circuit design. Either the concept of a computer program must be expanded to include hardware implementations, which is perhaps acceptable to electrical engineers and computer programmers[193] but may seem strange to others, or a broader definition of "use" must be considered under section 1003. That would be a definition that goes beyond writing computer programs.

This ruling left in doubt any prospects for protection under copyright law of command structures (i.e., very high-level programming languages for application programs). It now appears that the only way to provide intellectual property protection for such software abstractions would be to enact new legislation, such as that proposed in this article.

[192] *See* Ashton-Tate Corp. v. Fox Software, Inc., 760 F. Supp. 831 (C.D. Cal. 1990), *amended, id.* at 832 (C.D. Cal. 1991); Richard H. Stern, *(C):\> Software\Legal.hlp!*, IEEE MICRO, June 1991, at 42, 45 (describing copyright infringement claim based on Dbase II command vocabulary).

[193] According to computer science theory, it is appropriate to equate functionally an electronic circuit and a computer program: "Any operation performed by software can also be built directly into the hardware, and any instruction executed by the hardware can also be simulated in software. The decision to put certain functions in the hardware and others in the software is made on the basis of such factors as cost, speed, amount of memory required, reliability, and frequency of expected changes. There are no hard and fast rules to the effect that X must go into the hardware and Y must be programmed explicitly." ANDREW S. TANENBAUM, STRUCTURED COMPUTER ORGANIZATION 10 (1976).

them is an infringer.[184] In this vein, knowing sale or use of a product designed by use of a computer-aided design program embodying a protected algorithm could be designated an act of infringement. There appears to be no compelling need, however, for any such legal protection. Moreover, establishing it would probably cause more fear, uncertainty, and doubt among potential customers for software than any possible good the law could do to promote software progress. In a nutshell, this is a bad idea whose time has not yet come.

E. *Some Special Problems In Defining Use And Trafficking*

Use of a software abstraction is defined in section 1003 as preparation of a computer program embodying the abstraction, and trafficking is defined in section 1004 as executing the computer program, loading it, distributing a copy of it, and so on. These concepts work readily for algorithms. One uses an algorithm by writing a computer program that embodies the algorithm, and then one traffics in the so-embodied algorithm by trafficking in the computer program.[185] Do these concepts extrapolate to other kinds of software abstraction?

The same concept readily applies to a computerized method of doing business. Exploitation of a computerized method of doing business ordinarily first requires preparation of a computer program for carrying out the method, and then execution of the program in an appropriate setting or marketing the program to persons who will do that.[186] Probably, the same concept also applies to computer programming languages. One uses the language by writing a computer program in the language, and then one

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[184] Section 271(g) overturned prior law. *See, e.g.*, Welsbach Light Co. v. Union Incandescent Light Co., 101 F. 131 (2d Cir. 1900). In the bricks and contractor hypothetical in the text, the phrase "knowingly procures the bricks" means that the contractor knows of the infringing use of the patented process to make the bricks. The 1988 amendment provided an elaborate set of rules for determining when an actor acts knowingly, for purposes of awarding damages under section 271(g). *See* 35 U.S.C. § 287(b) (1994); *supra* notes 122 and 141.

[185] See *supra* notes 119–19 and 146–49, and accompanying text.

[186] *See In re* Johnston, 502 F.2d 765, 183 U.S.P.Q. (BNA) 172 (C.C.P.A. 1974), *rev'd on other grounds sub nom.* Dann v. Johnston, 425 U.S. 219, 189 U.S.P.Q. (BNA) 257 (1976); *see supra* note 121.

Section 1005. Additional uses and traffic

A person uses, or traffics in an embodiment of, a protected software abstraction, within the meaning of section 1001, if the person commits acts or conduct that a court, in an infringement action under this Act to which the person and the owner of rights in the abstraction are each party, determines, as a matter of law:

(a) are equivalent to, or are of like character as, acts and conduct described in sections 1003 or 1004; and

(b) must be considered use of or traffic in such subject matter to avoid defeating the purposes of this Act, as set forth in section 901.

The court to which the preamble of this section refers would be a federal district court, because other provisions of the statute procedurally would assimilate infringement actions under this Act to regular patent (or

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innovations in trade and commerce." Even more expansively, the following preliminary legislative findings might be appropriate:

Section 901. Legislative findings, purposes, policies

Important advances in software technology are frequently at a much higher level of abstraction, are less tangible in form, and apply more generally to a broader range of products and services than the traditional subject matter of intellectual property law. The protection and benefits of a software-directed industrial property law should not be denied as to technical advances in software art that are considered, under other intellectual property laws, to be mere ideas, natural principles, or other similarly unprotectable subject matter. Nor should they be denied as to purely evanescent, ephemeral, or transitory subject matter, such as imagery on a screen of a monitor, and signals in a transitory form such as those stored in a random-access memory of a computer. Whether software is embodied in hardware, such as electronic circuitry, or its use is limited to only certain hardware, should not be determinative of whether the software may be protected.

a product is specially adapted for software infringement is persuasive evidence that the supplier knows that it is contributing to occurrence of infringement, but it is possible that the supplier does not have culpable knowledge; the supplier should be entitled to prove that, if it can. By the same token, that a product is not specially adapted for infringement or is a common or staple article used sometimes or often for other things is not irrefutable proof of innocence.[177] Nor does demoting the fact of being a staple to evidence, rather than treating it as conclusive proof, of innocence

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[177] One can supply goods capable of substantial noninfringing use and nonetheless be liable, because of additional related conduct, for inducing patent infringement. Fromberg, Inc. v. Thornhill, 315 F.2d 407, 411, 137 U.S.P.Q. (BNA) 84, 86–87 (5th Cir. 1963); Burlington Indus., Inc. v. Exxon Corp., 379 F. Supp. 754, 757, 183 U.S.P.Q. (BNA) 729, 731 (D. Md. 1974).

That does not answer the question, however, whether one who sells goods capable of substantial noninfringing use, knowing that the customer will use the goods for infringement, should be liable for contributory infringement. *See* Henry v. A.B. Dick Co., 224 U.S. 1 (1912), *overruled by* Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502 (1917). In *A.B. Dick*, the Court held such conduct to be infringement. The defendant sellers sold ink to a user of a patented mimeograph machine, "with the expectation that it would be used in connection with said mimeograph," knowing also that the patentee had sold the machine subject to a restriction that the user must buy ink from the patentee or else be unlicensed and an infringer. *Id.* at 49. In addition, the Court observed that it was proper to hold someone liable for contributory infringement, when selling a product capable of both infringing and noninfringing use, only when the seller intended that the product be used infringingly, but added, "Such a presumption arises when the article so sold is only adapted to an infringing use." *Id.* at 48. (That is essentially the first presumption of proposed section 1002(b).)

Because of the tie-in between ink and machine, *A.B. Dick* was overruled in *Motion Picture Patents*, 243 U.S. at 502, and in 1914 Congress enacted section 3 of the Clayton Act, 15 U.S.C. § 14 (1994), to outlaw the conduct. *See Dawson Chem.*, 448 U.S. at 191 & n.10, 206 U.S.P.Q. (BNA) 394 & n.10. However, Congress has twice amended the patent laws, in 1952 and 1988, to modulate the intensity of the reaction against *A.B. Dick*. *See* 35 U.S.C. § 271(d) (1994).

This aspect of intellectual property and trade regulation law must be viewed as located over a major fault line between colliding tectonic plates. The resolution proposed here is therefore bound to be controversial, as would any proposal on this matter, either way.

legally protected software abstraction. If that imputed knowledge cannot be shown, the accused vicarious infringer is not liable.

Second, the accused vicarious infringer must actually have known, or should have known, that the other person (the person committing the direct infringement) would probably commit direct infringement, in violation of section 1001, by an unlawful use or trafficking. In the previous example, that could mean that the accused vicarious infringer should have known that the other person would probably market the computer program. The word "probably" is included here to negate the possible defense of "how could I be sure what my customer would do?" This provision does not go so far, however, as to adopt a "perhaps might infringe," "could anticipate" or "should suspect" standard of some decisions.[173]

Third, the accused vicarious infringer must actually have known, or should have known, that its acts would at least in substantial part cause or contribute to occurrence of the other person's direct infringement. In the previous example, that could mean that the accused vicarious infringer knew that whatever it did would help the other person to commit infringement by marketing the computer program. This causation test does not require that the challenged conduct has no possible or likely other result (such as when an accused party supplies a product without any substantial noninfringing use), nor that something be supplied that is specially adapted to infringement, as provided in section 271(c) of the patent law. The term "at least in substantial part cause or contribute to" requires the accused party's

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[173] *See* Inwood Labs., Inc. v. Ives Labs., Inc., 456 U.S. 844, 854 n.13, 214 U.S.P.Q. (BNA) 1, 5–6 n.13 (1982) (discussing other decisions following such tests but adopting standard requiring more proof); *see also* Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 439, 220 U.S.P.Q. (BNA) 655, 677 (1984) (supplying products to identified individuals whom defendant knows are engaging in continuing infringement).

In Manville Sales Corp. v. Paramount Sys., Inc., 917 F.2d 544, 552, 16 U.S.P.Q.2d (BNA) 1587, 1594 (Fed. Cir. 1990), the Federal Circuit held that "knew or should have known" that acts would induce direct infringement is the appropriate scienter standard for actively inducing patent infringement in violation of 35 U.S.C. § 271(b).

4. Inducement

Clause (ii) of subsection (a) is for all practical purposes the same as section 271(b) of the patent law. It is intended to have the same meaning.[165]

5. Contributory Infringement

Clause (iii) of subsection (a) provides a form of vicarious infringement liability that some lower courts have found to exist under copyright law.[166] This clause also borrows from the infringement concept of section 905(3) of the Semiconductor Chip Protection Act, which makes it infringement "knowingly to cause" another person to commit infringement.[167] Clause (iii) imposes vicarious liability on a person who intentionally commits acts, or engages in conduct, that causes another person to commit infringement. (Liability is conditioned additionally on a culpable state of mind described in subsection (b), which follows.)

Clause (iii) includes the concept of contributory infringement, as declared in section 271(c) of the patent law, and also includes some further, related conduct. Section 271(c) is in terms limited to providing a direct infringer with goods that are useful only in committing direct infringement,[168] and clause (iii) includes that. But clause (iii) further includes, as a basis for liability, supply to a direct infringer of goods or services that may have noninfringing uses, but in fact are used for infringing purposes, when the supplier does know or should know[169] that the goods or services will substantially facilitate (embraced within "causes" as used in the

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[165] See *supra* text accompanying note 83.

[166] *See, e.g.*, Cable/Home Communications Corp. v. Network Prods., Inc., 902 F.2d 829, 846, 15 U.S.P.Q.2d (BNA) 1001, 1012–13 (11th Cir. 1990) (adopting as standard "have reason to know").

[167] 17 U.S.C. § 905(3) (1994). For a discussion of this provision, see *Determining Liability, supra* note 66, at 283–88.

[168] 35 U.S.C. § 271(c) (1994); Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 440–42, 220 U.S.P.Q. (BNA) 665, 677–78 (1984); *Aro II*, 377 U.S. at 482, 141 U.S.P.Q. (BNA) at 684 (1964).

[169] The "should know" elements are described subsequently, in section 1002.

> (3) the person's acts and conduct would at least in substantial part cause or contribute to occurrence of the other person's use or trafficking.
>
> (c) A person trafficking in goods, services, or other things that have no substantial noninfringing use is rebuttably presumed to be committing conduct, by such trafficking, that the person knows or should know will cause a violation of section 1001. A person trafficking in goods, services, or other things that have a substantial noninfringing use is rebuttably presumed not to be committing conduct, by such trafficking, that the person knows or should know will cause a violation of section 1001.

This language is based on, but is not identical to, sections 271(b) and (c) of the patent law, and the copyright case law directly corresponding to them. This section also borrows language and concept from the Semiconductor Chip Protection Act and from some lower court copyright and patent law decisions.

2. Territorial Scope

The patent and copyright laws have generally been construed as not being extraterritorial as to direct infringement.[158] The final words of subsection (a) of section 1002, like those of section 1001, make this explicit. On the other hand, a person acting abroad who induces direct patent infringement in the United States is liable for the conduct under section 271(b) of the patent code.[159] So, too, apparently, is a person who sells goods

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[158] See *supra* note 67 and accompanying text.

[159] Honeywell, Inc. v. Metz Apparatewerke, 509 F.2d 1137, 184 U.S.P.Q. (BNA) 387 (7th Cir. 1975); Akzona, Inc. v. E.I. du Pont de Nemours Co., 662 F. Supp. 603, 4 U.S.P.Q.2d (BNA) 113 (D. Del. 1987); *see also* 35 U.S.C. § 271(f) (1994) (creating infringement liability for inducing conduct outside the United States that would infringe United States patent if conduct occurred in United States).

is reproducing, distributing, or importing a copy[154] of an abstraction-embodying computer program. The third example, in subsection (c), is loading an abstraction-embodying computer program into a memory device, whether permanent or impermanent. Whether copyright law covers loading a computer program into memory is unsettled.[155] Finally, in subsection (d), transmitting an abstraction-embodying computer program among computers or information storage media is described as an example of infringing trafficking.[156] As in the case of the definition of "use" in section 1003, the open-ended definition of "trafficking" in section 1004 does not exclude possible existence of other infringing instances of trafficking.

Subsection (a) exemplifies as "trafficking" causing an abstraction-embodying computer program to be executed "in a machine." The term "machine" is broader than the term "computer." It is not limited to a stand-alone computer, such as a mainframe or a personal computer; it includes a microprocessor. Thus, cooking in a microwave oven in accordance with a computer program that directs the oven's operation via a microprocessor chip, driving a car whose braking and ignition systems operate under programmed microprocessor control, and heating or air-conditioning a house with a "smart thermostat" are all acts within the scope of proposed section 1004(a).

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[154] "Copy" here has the same meaning as in copyright law. *See* 17 U.S.C. § 101 (1994). A copy of a computer program is an embodiment of the computer program in a tangible medium such as a floppy disk, EPROM, CD, or printout.

[155] *Compare* MAI Systems Corp. v. Peak Computer, Inc., 991 F.2d 511, 26 U.S.P.Q.2d (BNA) 1458 (9th Cir. 1993), *cert. dismissed*, 114 S. Ct. 671 (1994) (holding that loading a computer program into random-access memory (RAM) was an act of reproduction, in violation of 17 U.S.C. § 106(1)) *with* H.R. REP. NO. 94-1476, 94th Cong., 2d Sess. 53 (1976) (fixation does not extend to "transient reproductions such as those . . . captured momentarily in the `memory' of a computer") *and id.* at 62 (conduct not infringing reproduction without fixation).

[156] Transmission of a computer program is not an act of copyright infringement under present law, although it has been proposed to amend copyright law to cover such acts. *See* S. 1284 and H.R. 2441, 104th Cong., 1st Sess. (1995), discussed *supra* note 135. The bills would amend 17 U.S.C. §§ 101 and 106(3) to classify transmission of copyrighted material between computers as an act of public distribution, and thus copyright infringement.

absence, and subsequent statutory provisions (section 1011) will make authorization a defense or exception.

7. Use, Embodiment, Trafficking

The wording of section 1001 raises the question whether the verbs "use," "embody," and "traffic" (or their noun forms, "use," "embodiment," and "trafficking") should be defined in the statute or, like the comparable patent and copyright terms "make," "use," "sell," and "reproduce," should be left as undefined primitives. Probably, they can no more usefully be defined for the purposes of defining infringement of rights in software abstractions than can "use" for purposes of patent law.[148] They can partially be defined, however, in some contexts by non-exhaustive illustrations or examples, and something can be said about their inter-relationship. Such partial, open-ended definitions are the most that can realistically be expected.

Proposed section 1003 open-endedly defines use of a software abstraction in terms of preparing a computer program[149] that implements or embodies the abstraction.[150] For example, one might use a sorting algorithm

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[148] See *supra* notes 56–58 and accompanying text.

[149] The term "computer program" is defined in 17 U.S.C. § 101 in a not wholly satisfactory way. An alternative definition for the present purpose, built on the copyright definition, is:

> "Computer program" means a set of statements or instructions for transforming a first set of data, or signals representative thereof, to a second set of data, or signals representative thereof, in a machine, including, without limitation, a microprocessor, in accordance with a predetermined scheme, or for transforming a machine from a first state to a second state.

The reason for expressly mentioning microprocessors as an illustration of machine is to avoid the interpretation that a machine must be a large object with moving parts, as contrasted, for example, with a semiconductor chip. The definition of computer program in 17 U.S.C. § 101 is susceptible to the erroneous interpretation that a microprocessor chip is not a machine for purposes of the definition of computer program. That interpretation would exclude from protection some of the most important uses of software.

[150] "Implement" and "embody" are left as wholly undefined primitives.

The proposed standard under section 1001 is like that of section 271(a) of the patent law, in that it does not require copying and does not recognize independent creation as an absolute defense.[142] By the same token, section 1001 differs from copyright law, which requires copying and does recognize independent creation as an absolute defense.[143]

Some observers will argue for a requirement of intentional copying and for an absolute defense of independent creation. Those observers would argue that copying and independent creation provide necessary escape hatches, that they save copyright protection of software from being too burdensome or preemptive to other workers in the field, and that therefore they should be adopted here. One may question the utility of these escape hatches in actual practice, however, and therefore seek to deal with possible over-burdensomeness by fine-tuning remedies instead. It is believed that the

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notice of patent has affirmative duty to obtain competent legal counsel before infringing or continuing to infringe); Leinoff v. Louis Milona & Sons, Inc., 726 F.2d 734, 220 U.S.P.Q. (BNA) 845 (Fed. Cir. 1984) (holding infringer willful when it ignored infringement letter and did not study patent and seek legal advice). Case law concerning contributory and actively induced infringement also imposes a duty of reasonable inquiry. *See Aro II*, 377 U.S. at 488–90, 141 U.S.P.Q. (BNA) at 687–88 (holding that an infringement letter put the infringer on notice for purposes of contributory infringement); Manville Sales Corp. v. Paramount Sys., Inc., 917 F.2d 544, 552, 16 U.S.P.Q.2d (BNA) 1587, 1594 (Fed. Cir. 1990) (holding that for party to be liable for actively inducing patent infringement, in violation of 35 U.S.C. § 271(b), party must be shown to have known that its acts would induce direct infringement, or at least it must be shown that it should have so known).

The standard of proposed section 1001 is also analogous to the requirements of the patent marking statute, 35 U.S.C. § 287(a), which provide that a defendant must have actual or constructive notice of a patent before being liable for infringement damages, at least if giving such notice is feasible. *See also* 35 U.S.C. § 287(b)(5)(A) (1994) (providing guidelines as to when person using product of patented product has sufficient notice to be liable under 35 U.S.C. § 271(g); general standard is possession of "sufficient information to persuade a reasonable person that it is likely that" infringement occurred).

[142] See *supra* notes 62, 65, and accompanying text.

[143] See *supra* notes 63–64 and accompanying text. Evidence of independent creation could be relevant in showing initial lack of knowledge of infringement.

infringers. The last clause of section 1001—by requiring actual or imputed knowledge—therefore immunizes innocent infringers from infringement liability.

It may well be that different standards of imputed knowledge should apply to different kinds of infringers. For example, a manufacturer of software products (a publisher, such as Microsoft) might be held to a stricter standard than a retailer (such as Egghead). One way to accomplish this result is to specify the different standards for various different infringers in the statute. Another way to accomplish the result is to use a "know or should know" standard in the statute, and in litigation to apply criteria for determining what a person should know that depend on a variety of factors, including whether the person is a manufacturer or retailer.[140] The latter approach is considered preferable, and is therefore adopted here.

Copying. Proposed section 1001 does not state that the infringer's knowledge of the protected subject matter was derived from the work of the owner, such as by intentionally imitating ("copying") it. Thus, an accused infringer may initially lack knowledge of software rights and therefore not be liable, but it may later gain knowledge (for example, by notice from the owner of rights) and therefore become liable for any further acts of infringement.[141]

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[140] For example, a retailer would not ordinarily be expected to decompile computer programs to determine what algorithms they embody, or routinely procure an opinion of counsel before reselling a software product. On the other hand, it may be reasonable to expect a software publisher to know what is in the code of computer programs that its employees write, and to obtain advice of counsel before a major undertaking. The determination is necessarily fact-specific and case-by-case. For example, even a large software publisher may not actually know what is in a computer program module that it obtains from a third party and then incorporates into one of its own products. Whether such a publisher *should* know may not be answerable in terms of any universal prescription.

[141] That is what occurred in the *Netcom* case, discussed *supra* note 135. Religious Technology Ctr. v. Netcom On-Line Communications Servs., Inc., 907 F. Supp. 1361 (N.D. Cal. 1995). Defendant Erlich intentionally posted portions of the copyrighted works of L. Ron Hubbard, founder of the Church of Scientology, on the Usenet, using the bulletin board of defendant Klemesrud. *Id.* at 1365–66. The bulletin board's computer was programmed to write such postings to its hard disk and at the same time

MS-DOS 6 contained DoubleSpace, which is a software module for compressing information to conserve disk space, in accordance with a data-compression algorithm. Microsoft's DoubleSpace infringed Stac's method and system patents for data compression, and a jury entered a $120 million verdict against Microsoft for the patent infringement.[136] The patents claimed a method and a system, and did not claim the data-compression algorithm itself. Hence, most of the intermediaries such as Egghead could not have

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computer hardware and software, including modems, disk drives, and CPUs.

The *Nugent* and *MAPHIA* cases (putting aside the piratical conspiracy overtones) come closest to the future software distribution scenario described in the accompanying text, since they involved distribution of computer and video game software (although the algorithms or other abstractions embodied in the software were immaterial to copyright law). The statutory proposal of this article adopts a legal standard essentially the same as that of the *Netcom* district court. Under that standard, MAPHIA and Nugent would be held liable because of their apparently deliberate complicity in the infringement. In INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE: THE REPORT OF THE WORKING GROUP ON INTELLECTUAL PROPERTY RIGHTS (1995) [hereinafter IITF REPORT], a Clinton Administration interdepartmental task force recommended against limiting liability of network access providers, such as Netcom, America On-Line, CompuServe, and Prodigy, to knowing copyright infringement. The IITF REPORT said that such a limitation would take away access providers' incentive to devise means to prevent occurrence of infringement. *Id.* at 122–24. Legislation is pending to implement the recommendations of the IITF REPORT. *See* S. 1284 and H.R. 2441, 104th Cong., 1st Sess. (1995). For a discussion of various proposals to modify H.R. 2441 to give access providers greater immunity from copyright infringement liability, in return for their imposing various constraints on their subscribers, see Richard H. Stern, *Net Access and Divvying Up Pie*, IEEE MICRO, June 1996, at 5. For summaries of testimony at a joint Senate and House hearing on the bills and a later House hearing, see *House Subcommittee Hears Opposing Views on Copyright Protection Bill*, 23 COMPUTER L. REP. 245 (April 1996); *PTO, Copyright Office Praise Bill to Direct Traffic on Information Highway*, 51 Pat. Trademark & Copyright J. (BNA) 100 (Nov. 23, 1995).

[136] Stac Electronics, Inc. v. Microsoft Corp., 38 F.3d 1222 (Fed. Cir. 1994). *See* T.C. Doyle, *Stac Wins Patent Suit, Microsoft to pay $120M*, COMPUTER RESELLER NEWS, Feb. 28, 1994, at 3.

distribution, for delivering software by download will be an important feature of the Information Superhighway (alias National Information Infrastructure).[135]

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[135] Several copyright infringement decisions have involved such uploading and downloading of copyrighted material other than ordinary computer programs. The most interesting and perhaps most controversial of them was the recent decision in Religious Technology Ctr. v. Netcom On-Line Communications Servs., Inc., 907 F. Supp. 1361 (N.D. Cal. 1995), involving text material from the writings of L. Ron Hubbard, founder of the Church of Scientology. Large amounts of text, without sufficient accompanying critical comment to make the taking a fair use (at least insofar as defendant Erlich, the original uploader, was concerned), were placed on the *alt.religion.scientology* newsgroup of the Usenet. *Id.* at 1365–66. The original uploader reached the net via a bulletin board (defendant Klemesrud) that gained net access via defendant Netcom, a major net access provider. *Id.*

The district court held that the ordinary strict liability standards of direct infringement did not apply to Klemesrud or Netcom, because of the social utility of the Usenet and free access to it. *Id.* at 1372–73. Instead, the court ruled that they could be held liable only by satisfying a contributory infringement standard—that they knew or should have known of the copyright infringement.

While sound from a policy standpoint, the district court's opinion does not appear to be consistent with traditional copyright doctrine. Copyright law makes it a direct copyright infringement to reproduce protected material in any non-transitory copy. The direct infringement is excused only if the fair use defense or some other privilege justifies the reproduction. Here, the bulletin board defendant and Netcom each stored the material in nonvolatile memory such as hard disk, so that both of them reproduced the protected work in copies.

The conventional doctrine is illustrated by the decision in Sega Enters., Ltd. v. Accolade, Inc., 977 F.2d 1510, 24 U.S.P.Q.2d (BNA) 1561 (9th Cir. 1992), *cert. denied*, 113 S. Ct. 1582 (1993). The Ninth Circuit held that "intermediate copying" (i.e., copying where no infringing final copy was distributed or used on an ongoing basis) of software in order to reverse engineer it by disassembly was copying for purposes of 17 U.S.C. § 106(1), which makes unauthorized reproduction of a copy direct copyright infringement. *Id.* at 1519, 24 U.S.P.Q.2d (BNA) at 1566–67. The Ninth Circuit excused the copying and direct infringement only because it was fair use, in that the disassembly was needed to overcome Sega's lockout program which kept video game software out of Sega's customers'

§ 1004. Trafficking in protected subject matter

A person traffics in an embodiment of a protected software abstraction within the meaning of section 1001 if, with respect to any computer program that implements or embodies the protected software abstraction, the person:

(a) causes the computer program to be executed in a machine;

(b) reproduces, distributes, or imports a copy of the computer program;

(c) loads the computer program into a memory device, whether permanent or impermanent; or

(d) transmits the computer program among computers or information storage media.

6. General Definition Of Infringement

Section 1001 is a basic definition of direct infringement. First, it follows the general pattern described earlier of inclusion and exclusion. A broad description of infringement is expressly qualified here by exceptions and limitations that are to come later in the statute. Direct infringement is defined broadly as any use of a protected software abstraction or trafficking in an embodiment of it. The conduct must occur in the United States, however, because section 1001 does not attempt to be extraterritorial.[132]

Intent and knowledge. Proposed section 1001 states, in a controversial last clause, "and the person knows or should know that the software abstraction is protected under this Act." That clause makes liability for direct infringement depend on knowledge of the existence of the infringed intellectual property rights or at least knowledge that the rights of the owner are being violated.[133] Copyright and patent law do not have that

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[132] See *supra* note 67 and accompanying text. Section 1001 does not attempt to address the issues raised by sales abroad of products destined for resale or use in the United States. That issue is addressed in section 1002.

[133] That clause of section 1001 makes infringement liability depend on actual or imputed knowledge, despite the wording of sections 1003 and 1004, which respectively define use and trafficking without reference to

is too abstract to qualify.[128] It is not the *kind* of process that patent law covers.[129] One cannot make, use, or sell an algorithm, in the ordinary senses of those verbs.

4. Closest Analogs

Canvassing the various acts of infringement recognized under copyright and patent law indicates that none of them corresponds exactly to the catalog of possible acts of exploitation of computer software abstractions and infringement of rights in them. Perhaps, use, especially use of a patented process, comes closest. Distribution of copies may also be relevant. But for the reasons set out above, the infringement concepts of copyright and patent law cannot be incorporated bodily into a law which governs infringement of algorithms and other software abstractions. They do not fit exactly enough, although they *suggest* the kind of acts which a law protecting software abstractions should consider.

The act of "use by embodiment" is probably the central right for a software abstraction and is thus the central potential act of software infringement. Other ways to use a software abstraction may exist, but it is unclear what they are. Another important act of software infringement is something that we might call "trafficking in embodiments" of the abstraction. Examples of such trafficking are sale of a computer program using the abstraction, execution of the program, and transmission of the program over a network. These acts of trafficking can occur only after use of the software abstraction by embodying it into a specific program has occurred, so that something exists in which to traffic in that manner. Typically, the computer program embodiment of the abstraction is stored in a storage medium, such as a floppy disk or semiconductor chip product, before any further distribution or commercial use occurs.

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[128] *In re* Schrader, 22 F.3d 290, 30 U.S.P.Q.2d (BNA) 1455 (Fed. Cir. 1994).

[129] Parker v. Flook, 437 U.S. 584, 588–89, 198 U.S.P.Q. (BNA) 193, 196–97 (1978); Gottschalk v. Benson, 409 U.S. 63, 64, 175 U.S.P.Q. (BNA) 673, 674–77 (1972).

or infringe rights in, a software abstraction, but their importance is not obvious.[122]

2. Is That What You Do Under Copyright Law?

To what extent are the categories of copyright law helpful in describing these things? Can one reproduce an algorithm in copies or distribute copies of it? In principle, one could reproduce an algorithm in a copy by printing out a description or recitation of its steps (for example, in a book), and one could distribute the copy (book). In fact, such books about algorithms are on the market. But that is not the kind of conduct that an intellectual property law concerning algorithms would need to address, for copyright law already does that. The same is true for book reproduction and distribution of other software abstractions, such as programming languages and data structures. Such copies are not the kind of copies, or the kind of embodiments, that correspond to how a software abstraction is utilized in a commercially or industrially important way: namely, putting it into a computer program and using the program to do something of value to the user. That kind of conduct should be the main target of a definition of infringement of rights in software abstractions.

The obstacle to using the basic copyright concepts of infringement is that software abstractions are at a remove from the ordinary subject matter of copyright. One must first embody the software abstraction into a work of authorship and only then embody the work into a copy whose reproduction or distribution can be challenged as infringement. This simply

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[122] In principle one might go farther down the distribution chain, but that would be problematic. For example, one might consider the marketing of products made with equipment operating under the control of a computer program embodying a software abstraction. One might then consider the commercial use of the products so made. Clearly, policy reasons dictate some limit. *See* Dawson Chem. Co. v. Rohm & Haas Co., 448 U.S. 176, 240–41, 206 U.S.P.Q. (BNA) 385, 415 (1980) (Stevens, J., dissenting) (discussing extension of process patent rights to patented machinery). Congress has considered the problem of where to stop for products "made by a process patented in the United States." If the product is "materially changed by subsequent processes" or "becomes a trivial . . . component of another product," infringement liability stops. 35 U.S.C. § 271(g) (1994). Lack of knowledge is also important in determining whether to fasten such liability. *See id.* § 287(b)(2).

in relation to an embodiment of the work, invention, or other protected subject matter. This dualism could apply to any intellectual property system devised for protection of rights in software abstractions, because the abstractions have their commercial utility and thus their economic value primarily in something useful that embodies them (typically, a computer program). By the same token, infringement must necessarily involve some legally forbidden appropriation of that value, such as unlawful imitation of the abstraction in an embodiment of it (for example, a computer program).

Dualism would be unnecessary if it were feasible to focus legal protection only on the more tangible level of embodiment and ignore the more abstract level. This is practical, however, only when an abstraction has just one embodiment and any variations from it are merely trivial. For a plant patent or design patent, only one plant or design embodiment may exist, thus making any invention/embodiment distinction immaterial. That may be true for a chip layout as well. In such circumstances, infringement can be defined successfully in terms of only the protected embodiment and insubstantial variations on it. In contrast, a software abstraction (like a copyrighted work or patented invention) has many different possible commercial embodiments, all of which should be protected. That suggests need that legal protection should attach to an abstraction or generalization of these commercial embodiments in order to encompass all of them.

It remains now to proceed, and perhaps extrapolate, from patent and copyright law to define which things done to embodiments of software abstractions should be deemed impermissible imitation and thus unlawful acts of infringement.

B. *Acts Of Direct Infringement*

The paradigms of copyright infringement and patent infringement have been discussed. Under copyright law there is a work, which one embodies in a copy and distributes. Under patent law, there is an invention. If it is a process, one uses it. If it is a machine, article of manufacture, or composition of matter, one make, sells, or uses it. One may therefore ask what is a comparable act of infringement for an algorithm or other software abstraction?

Consider that question in several ways. First, what are the known relevant acts for software abstractions? Second, how might one analogize or

that is what the statute means.[111] In this part of the patent statute, "invention" does not mean the act of inventing or some kind of related abstraction. Instead, "invention" means a specific physical embodiment of the thing invented—for example, a unit of a patented machine or an article of manufacture that embodies the invention or is made in accordance with the invention. Thus, manufacture, sale, and use of a patented product are the central exclusive rights under patent law and, by the same token, they are also the central acts of infringement.[112] Patent law also makes it an act of infringement to use a patented process[113] or to import, sell, or use a product made by a patented process.[114]

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[111] Similar infelicitous terminology occurs in 35 U.S.C. § 102(b), which makes an invention unpatentable if the "invention was . . . on sale" more than a year before the inventor filed a patent application on it. This has at times led to confusion over what conduct would bar a patent. *See* Moleculon Research Corp. v. CBS, Inc., 793 F.2d 1261, 1267, 229 U.S.P.Q. (BNA) 805, 809 (Fed. Cir. 1986), *cert. denied*, 479 U.S. 1030 (1987) (holding that invention is not on sale within meaning of § 102(b) merely because inventor sells or offers to sell patent rights to invention; rather, physical embodiment of invention must be on sale).

[112] 35 U.S.C. § 271(a) (1994).

[113] One can make and sell a product, but one cannot make or sell a process, as such. One can sell a service such as that of performing (using) a process, but that is not the sale of the process, in the ordinary sense of the term. The seller's patent infringement liability, if any, is for using the process, not for selling it. Distinctions of this sort may seem immaterial, but they have been the basis of venue decisions when patentees sought to base venue on the commission of an act of infringement within the jurisdiction. *See* Koratron Co. v. Lion Uniform, Inc., 449 F.2d 337, 171 U.S.P.Q. (BNA) 452, 453 (9th Cir. 1971) (selling product of patented process is not act of infringement for venue purposes; infringing use of process must be within jurisdiction). However, selling the product of a process can be the kind of sale that creates a statutory bar to patenting the process. *See* Pennock v. Dialogue, 27 U.S. (2 Pet.) 1, 23–24 (1827).

[114] 35 U.S.C. § 271(g) (1994). There are a number of exceptions to and qualifications of this right. For example, no remedy may be granted in respect of noncommercial use unless it is shown that there is no other adequate remedy; no relief is available in regard to products materially changed by other processes after the use of the patented process and before the importation. *Id.*

"distribute copies" of the work.[107] A question to be resolved is whether this metaphysics or machinery is needed to define a proper concept of infringement of intellectual property rights in software abstractions.[108]

(1994), since the earlier and later programs served the same basic function and incorporated much the same code.

Similar problems occur in regard to chip layouts under the SCPA, *see* 17 U.S.C. § 908(a) (forfeiture of rights for failure timely to register), because chips (such as the Pentium microprocessor chip) go through successive revisions. The Copyright Office's registration form (Form MW, space 8) calls for indication of what parts of a chip layout are different from those of any earlier registration. For a discussion of the problems of which version of a chip to register, *see* CHIP PROTECTION, *supra* note 44, § 3.5(B)(6).

These problems may be anticipated under the proposed statute of this article, since they are already endemic to computer programs. They should be less severe in the present context than they are in regard to copyright and mask works, however, because the proposed statute is directed at a higher and more narrowly focused level of abstraction than are the works of copyright law and mask work law. For example, a bugfix version of a commercial computer program does not utilize a different, newly devised algorithm; it embodies the same algorithm(s) with a slightly different code. Of course, improvements of algorithms may occur in later versions. But at this higher level of abstraction, the problem should be no different from the existing patent law problem of when an improvement is different enough to justify a new patent, *see* 35 U.S.C. § 103 (1994); accordingly, patent law's existing solutions to the problem should apply here.

[107] 17 U.S.C. § 106(3) (1994).

[108] The SCPA, 17 U.S.C. §§ 901–914 (1994), uses similar machinery, but does so largely because of a historical accident. The SCPA protects intellectual property rights in "mask works," which the SCPA defines as a series of related images comprising the three-dimensional pattern of a chip. *Id.* § 901(a)(2). An owner of a mask work has the exclusive right to reproduce, import, and distribute a semiconductor chip in which the mask work is embodied. *Id.* § 905. Anyone who violates the exclusive rights of an owner of a mask work is liable as an infringer of such rights. *Id.* § 910(a).

The reason this mask work conceptual machinery exists is that in its original form the SCPA was an amendment of the Copyright Act and had to fit under its scheme. Although the Senate adopted the copyright approach, the House refused to do so. The final statutory compromise

the wall of the cave. An abstract formulation of the advance exists in the form of a "work" or "work of authorship."[102] The work is not something tangible such as a book or floppy disk. Those are media in which a work can be embodied (fixed) in tangible, physical form to provide a "copy" of the work.[103]

Typically, one infringes a copyright by doing a prohibited act to a tangible copy of the abstract work. For example, one reproduces a computer program work in a copy by encoding the computer program in machine-readable form into a floppy disk or memory chip, which one may then distribute.[104] Those acts of reproduction and distribution are paradigmatic acts of copyright infringement of a computer program.[105] For purposes of copyright infringement, one does not simply reproduce or distribute the work. Rather, one must "reproduce the copyrighted work in copies"[106] or

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[102] These are undefined primitive terms in the Copyright Act. *See* 17 U.S.C. § 101 (using but not defining the terms).

[103] The House Report on the current statute, the 1976 Copyright Act, states: "A 'book' is not a work of authorship, but is a particular kind of 'copy.' Instead, the author may write a 'literary work,' which in turn can be embodied in a wide range of 'copies'. . . including books, . . . computer punch cards . . . ." H.R. REP. NO. 94–1476, 94th Cong., 2d Sess. 53 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5666.

Earlier copyright acts, beginning in 1790, did not employ work/embodiment dualism, and simply protected "maps," "books," and similar physical things. *See* Mazer v. Stein, 347 U.S. 201, 208–10 (1954) (reviewing wording of successive copyright statutes).

[104] One may instead simply print out the source code on a piece of paper, in human–readable form, but that is usually not a commercially rewarding way to exploit or infringe a copyright in a computer program.

[105] *See, e.g.*, Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 219 U.S.P.Q. (BNA) 113 (3d Cir. 1983), *cert. dismissed by stipulation*, 464 U.S. 1033 (1984).

[106] 17 U.S.C. § 106(1) (1994). This is the customary copyright law way of expressing it, but it may not be as precise and punctilious as it could. It would be more correct, probably, to consider that one often fixes or reproduces successive versions of a work in copies. A literary work, such as this article or a computer program, is often expressed in many different verbal or symbolic formulations. For example, one may select somewhat

infringement was brought back into the patent laws after its judicial ejectment.[96]

Neither the patent nor copyright statutes expressly addresses conspiracy to commit infringement, but case law recognizes the concept.[97] The case law applies the general law of civil conspiracy in a conventional manner, thus requiring a claimant to prove intentional concert of action among the alleged conspirators to cause infringement; this entails a very high standard of proof for culpable state of mind. It is unclear whether conspiracy to violate federal intellectual property rights is a federal intellectual property claim or a state common law claim.[98]

In sum, the concept of infringement of intellectual property rights has several distinct, important dimensions: the kind of imitative acts that the law considers infringing, the exceptions to those acts that may immunize otherwise infringing imitative conduct, the scope of protected subject matter, how close the imitation must be for it to be held to be infringing, and the kind of complicity in and knowledge about another's infringing acts that makes a supplier or other third party liable for the infringing acts. Imitative conduct challenged as infringement must be mapped onto this multidimensional "infringement space," to make a determination whether the conduct falls within or without the boundary separating infringement

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[96] *Id.* at 514, 524–27, 141 U.S.P.Q. (BNA) at 700–01, 703.

[97] Astor–Honor, Inc. v. Grosset & Dunlap, Inc., 441 F.2d 627, 629, 170 U.S.P.Q. (BNA) 65, 66–67 (2d Cir. 1971) (Friendly, J.) (copyright infringement); Ernster v. Ralston Purina Co., 740 F. Supp. 724, 727–28, 16 U.S.P.Q.2d (BNA) 1222, 1224 (E.D. Mo. 1990) (patent infringement); Schuchart & Assoc. Prof. Eng'rs v. Solo Serve Corp., 540 F. Supp. 928, 937, 217 U.S.P.Q. (BNA) 1232–33 (W.D. Tex. 1982) (copyright infringement).

[98] In *Schuchart*, for example, the court insisted that conspiracy to commit copyright infringement must arise under state civil conspiracy law. 540 F. Supp. at 937, 217 U.S.P.Q. (BNA) at 1232. In *Astor–Honor*, however, the Second Circuit (per Judge Friendly) considered that a claim of conspiracy to commit copyright infringement could arise under state unfair competition law *or* under federal copyright law, or at least that the latter claim would not be frivolous. 441 F.2d at 629, 170 U.S.P.Q. (BNA) at 66–67.

contributory infringement, the case law recognizes the concept and defines it similarly to the patent law doctrine.[87]

As with the main core of infringement, the statutes are not definitive. The copyright statute leaves vicarious liability wholly to the case law,[88] and the patent statute is sufficiently unclear to have divided the Supreme Court 4-4-1, with different 5-4 majorities on how to interpret different aspects of the subsection on contributory infringement.[89] A difficult problem in all of the intellectual property contributory infringement cases has been how much knowledge a defendant must have to be held culpable when accused of complicity in infringement. Probably, mere suspicion (falling short of a "should have known" standard) that a customer will commit infringement is insufficient under any intellectual property law.[90] A supplier knowing that a customer is using the supplier's goods to commit trademark infringement is liable, even though the supplier does not urge the customer to infringe

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[87] *Sony*, 464 U.S. at 442, 220 U.S.P.Q. (BNA) at 678. A number of lower court decisions have imposed vicarious copyright infringement liability more broadly, based on the principle that one who profits from another's copyright infringement must share legal liability, at least when the vicariously liable person could have exercised control over the actual infringer to prevent the infringement and perhaps also "knew or should have known that they were dealing in illegal goods." *Sony*, 464 U.S. at 437 n.18, 220 U.S.P.Q. (BNA) at 676 n.18 (commenting only, as to these decisions and stating that "[t]his case, however, plainly does not fall in that category."); *see supra* note 82.

See also Inwood Labs., Inc. v. Ives Labs., Inc., 456 U.S. 844, 214 U.S.P.Q. (BNA) 1 (1982) (discussing contributory infringement issues under trademark law).

[88] *Sony*, 464 U.S. at 434, 220 U.S.P.Q. (BNA) at 675.

[89] *Aro II*, 377 U.S. at 476, 141 U.S.P.Q. (BNA) at 681. The SCPA substantially tracks the majority opinions of the Supreme Court in *Aro II*. *See* 17 U.S.C. § 905(c) (stating that it is unlawful to "induce or knowingly cause another person" to infringe); H. REP. NO. 98–781, 98th Cong., 2d Sess. 21 (1984) (Star Print ed.) (stating that § 905(c) follows the contributory infringement standard described in *Aro* and *Sony*).

[90] *Sony*, 464 U.S. at 439 n.19, 220 U.S.P.Q. (BNA) at 677 n.19 (copyright infringement case). The Court unanimously disapproved a "could reasonably anticipate" standard in *Inwood Labs.*, 456 U.S. at 854 n.13, 214 U.S.P.Q. (BNA) at 5 n.13 (discussing trademark infringement).

"will continue to depend on the selection of the panel."[81] Hence, even with claims it may be problematical in patent infringement litigation to determine *how* similar an accused product must be to a patented product for the similarity to be actionable.

D. *Complicity And Vicarious Liability*

Another dimension of infringement of intellectual property rights is that of vicarious liability (that is, liability for complicity in another's infringing conduct). One may become vicariously liable for infringement, under patent and copyright law alike, if one culpably causes another person to commit direct infringement.[82] The patent statute addresses the issue of

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[81] Malta v. Schulmerich–Carillons, Inc., 959 F.2d 923, 21 U.S.P.Q.2d (BNA) 2039 (Fed. Cir.) (Newman, J., concurring), *cert. denied*, 504 U.S. 974 (1992). The Federal Circuit's subsequent *en banc* 7–5 decision in Hilton–Davis Co. v. Warner–Jenkinson Co., 62 F.3d 1512, 35 U.S.P.Q.2d (BNA) 1641 (Fed. Cir. 1995), *cert. granted*, 116 S. Ct. 1014 (1996), did not clarify matters. If anything, it left doctrine of equivalents jurisprudence in even worse disarray than before.

[82] Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 435, 220 U.S.P.Q. (BNA) 665, 675 (1984) ("[V]icarious liability is imposed in virtually all areas of the law, and the concept of contributory infringement is merely a species of the broader problem of identifying the circumstances in which it is just to hold one individual accountable for the actions of another."). The holding in *Sony* actually turned on an element of vicarious liability other than culpable state of mind. The Court ruled that vicarious liability under copyright law should be measured by the same standards as it is under patent law. One essential element of such liability is that someone actually committed direct infringement. *Aro I*, 365 U.S. 336 (1961) (holding that supplier did not commit contributory infringement, because customers were entitled to repair patented device by using supplier's product). Because much of the conduct challenged as direct infringement in *Sony* was found to be shielded by the fair use privilege, the Court held that defendant Sony was not indirectly (vicariously) liable.

As the Supreme Court used the term in *Sony*, vicarious liability is a generic concept including any form of liability imposed on one having a culpable relationship to another's unlawful acts, and contributory infringement is a species or subset of vicarious liability. Some lower court copyright infringement decisions have used the term differently, however, to refer to conduct that was neither contributory infringement nor active inducement of infringement. The culpable conduct was instead simply permitting someone else to commit infringement in circumstances such

expression,[73] ultimately concluded that the decision must be made on an *ad hoc* basis.[74] Moreover, even if one can be confident what is protected expression rather than unprotected idea, the problem still exists of *how* similar the expression of an accused work must be to the protected expression of a copyrighted work for the similarity to be actionable.[75]

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[73] *See* Sheldon v. Metro-Goldwyn Pictures Corp., 81 F.2d 49 (2d Cir.) (L. Hand, J.), *cert. denied*, 298 U.S. 835 (1936); Nichols v. Universal Pictures Corp., 45 F.2d 119 (2d Cir. 1930) (L. Hand, J.), *cert. denied*, 282 U.S. 119 (1931).

[74] Peter Pan Fabrics, Inc. v. Martin Weiner Corp., 274 F.2d 487, 489, 124 U.S.P.Q. (BNA) 154, 155 (2d Cir. 1960). *Peter Pan* was the last copyright opinion that Judge Hand wrote, after approximately a half century of copyright opinions.

[75] Such actionable similarity is termed "substantial similarity" in copyright law. Actionable similarity under the Semiconductor Chip Protection Act of 1984 ("SCPA") is generally similar to the copyright concept, although the SCPA requires a greater degree of similarity for liability than copyright law does in the case of imaginative, highly creative works. CHIP PROTECTION, *supra* note 44, at § 4.6.

Trademark law, not addressed in detail in this article, has a concept of infringement based on "confusing similarity." *See* Two Pesos, Inc. v. Taco Cabana, Inc., 505 U.S. 763, 779, 23 U.S.P.Q.2d (BNA) 1081, 1087–88 (Stevens, J., concurring); New West Corp. v. NYM Co., 595 F.2d 1194, 1201, 202 U.S.P.Q. (BNA) 643, 648–49 (9th Cir. 1979) (explaining that ultimate legal test is whether public is likely to be deceived or confused by similarity, and that legal test is identical for infringement, unfair competition, and false designation of origin). The legal standards of both copyright and trademark law tend to gravitate toward the Delphic simplicity of Justice Stewart's "I know it when I see it," *see* Jacobellis v. Ohio, 376 U.S. 184, 197 (1964), and to defy use of more publicly visible analysis.

The standards of substantial similarity and confusing similarity are not the same, for the interests that the two standards exist to protect and the wrongs against which they operate are different—misappropriation of another's creative work in a copyright case and misappropriation of the other's regular or likely customers in a trademark case. Imitative conduct may confuse customers but not pirate the expressive gist of a work, and vice versa.

unclear whether the Semiconductor Chip Protection Act, which is silent on the issue, follows the patent or copyright pattern.[66]

3. Territorial Scope

Acts on which infringement liability is based must occur within the United States, because neither the copyright nor patent statute purports to be extraterritorial in scope.[67] Nonetheless, when conduct occurs abroad that has a substantial impact within the United States—for example, when goods destined for the United States are sold F.O.B. a foreign port,[68] or acts of

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[66] *See* Richard H. Stern, *Determining Liability for Infringement of Mask Work Rights Under the Semiconductor Chip Protection Act*, 70 U. MINN. L. REV. 271, 303–13 (1985) (discussing respective policy interests favoring and opposing requirement of copying as element of claim for relief) [hereinafter *Determining Liability*].

[67] Unless Congress expressly states otherwise, an intellectual property law is considered not to be extraterritorial. *See* Deepsouth Packing Co. v. Laitram Corp., 406 U.S. 518, 531 , 173 U.S.P.Q. (BNA) 769, 774 (1972); Robert Stigwood Group, Ltd. v. O'Reilly, 530 F.2d 1096, 1100–01, 189 U.S.P.Q. (BNA) 453, 456–57 (2d Cir.), *cert. denied*, 429 U.S. 848 (1976). Nonetheless, the author considers it better drafting practice to be explicit than to await judicial interpretation.

The copyright statute does not mention territorial scope of rights or infringement liability. The general section of the patent statute on direct infringement liability, 35 U.S.C. § 271(a) (1994), states that conduct "within the United States" can be patent infringement, and the section defining the terms of a patent grant, *id.* § 154, states that the grant is one of an exclusionary right "throughout the United States." As the *Deepsouth* case shows, it is not always clear when conduct may be said to occur "within the United States." *See also id.* § 271(f) (1988 amendment to patent law, overturning *Deepsouth* in respect of exportation of some equipment components).

[68] *See* North Am. Philips Corp. v. American Vending Sales, Inc., 35 F.3d 1576, 1579–80, 32 U.S.P.Q.2d (BNA) 1203, 1205 (Fed. Cir. 1994); *cf.* Beverly Hills Fan Co. v. Royal Sovereign Corp., 21 F.3d 1558, 30 U.S.P.Q.2d (BNA) 1001 (Fed. Cir.), *cert. dismissed*, 115 S. Ct. 18 (1994) (basing "stream of commerce" long-arm jurisdiction on foreign seller's conduct leading to patent infringement within United States).

is clear that infringement is transgression of an intellectual property owner's right to be the only person to make, use, sell, or reproduce protected subject matter, it is not always clear what acts amount to such transgression. Even if patent law provided us with a definition of "use,"[56] or if we believed that we intuitively understand what that term means, nonetheless there are so many different kinds of use that it would still remain to be decided whether a particular challenged use was the kind of use that the law ought to prohibit. For example, is use of a patented product in experimentation the kind of use against which the patent law protects a patentee?[57] Is showing a patented product in the course of a television commercial such a use?[58] Is loading a computer program into random-access memory (RAM) a reproduction of a copy of the computer program code?[59]

Ford Motor Co. v. Summit Motor Prods., Inc., 930 F.2d 277, 299–301 (3d Cir. 1991) (holding that one-time gift to business acquaintance of some plastic bags bearing copyrighted picture held infringing distribution to public), *cert. denied*, 502 U.S. 939 (1991).

[56] "Use" may be defined as "to employ for some purpose; put into service; make use of...to avail oneself of; apply to one's own purposes . . . ." RANDOM HOUSE DICTIONARY OF THE ENGLISH LANGUAGE 2097 (2d ed. unabr. 1987); *accord*, WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE 2523 (3d ed. unabr. 1993). But these definitions only shift the problem to another level, for phrases such as "to employ for some purpose" are no more self-defining than "use" is. "Use" must be regarded as an undefined primitive term in infringement law, as is "point" in geometry or NAND in some propositional logics.

[57] *See* Roche Prods., Inc. v. Bolar Pharmaceutical Co., 733 F.2d 858, 221 U.S.P.Q. (BNA) 792 (Fed. Cir.), *cert. denied*, 469 U.S. 856 (1984).

[58] *See* Kaz Mfg. Co. v. Chesebrough-Ponds, Inc., 317 F.2d 679, 137 U.S.P.Q. (BNA) 598 (2d Cir.), *cert. denied*, 375 U.S. 905 (1963).

[59] *See* MAI Systems Corp. v. Peak Computer, Inc., 991 F.2d 511 (9th Cir. 1993), *cert. dismissed*, 114 S. Ct. 671 (1994). In *MAI* the Ninth Circuit ruled that when a service person turned on a computer to repair it, thus causing it to load a copyrighted ROM BIOS into RAM, the person committed an act of infringing reproduction of a copy, if the copyright owner had not authorized the conduct.

estoppel,[38] exhaustion by sale,[39] express[40] or implied license, the right of fair use,[41] the right to make archival copies of computer programs,[42] and the right to modify a computer program to utilize it in a computer system.[43]

Other United States intellectual property laws have similar concepts of infringement, and statutory and common-law limitations on scope or exercise of rights. The Semiconductor Chip Protection Act[44] ("SCPA") defines infringement in a manner similar to patent and copyright law.[45] The statute then exempts reverse engineering and innocent infringement, and codifies the exhaustion doctrine.[46] The trademark statute follows its section defining infringement[47] with a section setting forth defenses, such as plaintiff's abandonment of the mark, misdescriptiveness, defendant's prior use,

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[38] Hampton v. Paramount Pictures Corp., 279 F.2d 100, 124 U.S.P.Q. (BNA) 623, 625 (9th Cir.), *cert. denied*, 364 U.S. 882, 127 U.S.P.Q. (BNA) 555 (1960).

[39] 17 U.S.C. § 109 (1994).

[40] S.O.S., Inc. v. Payday, Inc., 886 F.2d 1081, 1087–88, 12 U.S.P.Q.2d (BNA) 1241, 1246–47 (9th Cir. 1989).

[41] 17 U.S.C. § 107(2) (1994).

[42] *Id.* § 117(2).

[43] *Id.*; *see* Aymes v. Bonelli, 47 F.3d 23, 33 U.S.P.Q.2d (BNA) 1768 (2d Cir. 1995); Foresight Resources Corp. v. Pfortmiller, 719 F. Supp. 1006, 13 U.S.P.Q.2d (BNA) 1721 (D. Kan. 1989).

[44] 17 U.S.C. §§ 901–14 (1994). This statute, a hybrid of patent and copyright law and a kind of petty patent law, provides legal protection for the topography or layouts of semiconductor chips. *See generally* RICHARD H. STERN, SEMICONDUCTOR CHIP PROTECTION (1986) (treatise on statute) [hereinafter CHIP PROTECTION].

[45] 17 U.S.C. § 905 (1994).

[46] *Id.* §§ 906(a), 907, 906(b).

[47] Trademark Act § 32, 15 U.S.C. § 1114 (1994).

In patent law, a patentee has a right to relief[25] against a person who has, without the patentee's authorization, made, used, or sold the patented subject matter,[26] or culpably caused another person to do so.[27] These rights, however, are subject to a number of exceptions, immunities, and privileges to which a defendant may be entitled—including failure to mark,[28] laches,[29] estoppel,[30] exhaustion of rights by sale,[31] and express[32] or implied[33] license.

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[25] 35 U.S.C. § 284 (1994) (addressing monetary relief). A patentee also has a right to injunctions against future unauthorized manufacture, use, and sale, subject to the general principles of equity. *Id.* § 283.

[26] *Id.* §§ 154, 271. In addition, patent owners have rights against importation, against use, and sale of products made by means of a patented process, *id.* § 271(g), and against some exports of components of patented equipment, *id.* § 271(f).

[27] *Id.* § 271(b), (c); *see Aro II*, 377 U.S. 476, 141 U.S.P.Q. (BNA) 681 (1964).

[28] A patentee may collect damages for infringing products only if the infringer had actual notice or, because the patentee marked patented products with the patent number, constructive notice of the patent before infringement occurred. 35 U.S.C. § 287(a) (1994); Amsted Indus., Inc. v. Buckeye Steel Castings Co., 24 F.3d 178, 187, 30 U.S.P.Q.2d (BNA) 1462, 1469 (Fed. Cir. 1994); American Med. Sys., Inc. v. Medical Eng'g Corp., 6 F.3d 1523, 1537 n.18, 28 U.S.P.Q.2d (BNA) 1321, 1331 n.18 (Fed. Cir. 1993), *cert. denied*, 114 S. Ct. 1647 (1994).

[29] A.C. Aukerman Co. v. R.L. Chaides Constr. Co., 960 F.2d 1020, 22 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1992).

[30] *Id.*

[31] Wilbur-Ellis Co. v. Kuther, 377 U.S. 422, 425, 141 U.S.P.Q. (BNA) 703, 705 (1964); Intel Corp. v. ULSI Sys. Technology, Inc., 995 F.2d 1566, 1568, 27 U.S.P.Q.2d (BNA) 1136, 1138 (Fed. Cir. 1993), *cert. denied*, 114 S. Ct. 923 (1994).

[32] De Forest Radio Tel. & Tel. Co. v. United States, 273 U.S. 236, 240–41 (1927); Henry v. A.B. Dick Co., 224 U.S. 1, 24 (1912); Anthony Co. v. Perfection Steel Body Co., 315 F.2d 138, 141, 137 U.S.P.Q. (BNA) 186, 188 (6th Cir. 1963).

[33] Met-Coil System Corp. v. Korners Unlimited, 803 F.2d 684, 686–87, 231 U.S.P.Q. (BNA) 474, 475–76 (Fed. Cir. 1986); *see* B.B. Chem. Co. v. Ellis, 314 U.S. 495 (1942).

them,[22] must therefore be regarded as tentative and possibly just wrong. One must begin somewhere.

II. THE CONCEPT OF INFRINGEMENT IN INTELLECTUAL PROPERTY LAW

A. *The General Pattern Of Inclusion And Exclusion*

Every intellectual property law has a concept of infringement of intellectual property rights, which is the complement of the rights owner's legal power, subject to certain limits, to exclude unauthorized persons from engaging in certain essentially imitative[23] acts and conduct.[24] The basic

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[22] The implementation of infringement concepts into statutory language, as proposed in this article, is neutral as to the main aspects of the statutory scheme in which the provisions are located. Thus, it is not described, at least initially, whether the scheme is one of slightly modified copyright law, patent law, or a *sui generis* intellectual property law; and the proposed implementation is intended to be sufficiently generic to fit any of these approaches. The author's view is that the best fit to the needs of the subject matter is realized by creating a petty patent system for software abstractions, placed in a new Part V at the end of the present patent code. *See Algorithm Conundrum, supra* note 4, at 213–32.

It is possible to discuss and resolve many important infringement issues without first deciding what the shape of the rest of the system should be. Nevertheless, to place the present analysis of infringement in a larger context, an Appendix, *infra* text accompanying notes 314-21, is provided that summarizes the proposal for a petty patent system directed to software abstractions. A central concept in any such system must be that of infringement of protected rights. What acts by a prospective defendant should be considered to infringe a plaintiff's petty patent on a software abstraction? Or, to turn the question around, what should be the rights that a software abstraction petty patent confers on its owner? Moreover, what should be the limitations on those rights, in terms of exceptions, immunities, and privileges, to which a defendant is entitled? This article addresses those questions.

[23] The word "imitative" often has a connotation of deliberate, conscious duplication of another's acts. Patent law and copyright law do not require for infringement liability, however, that a defendant–infringer intended to copy the work of a plaintiff–intellectual property rights owner. Accordingly, "imitative" is used above in the text without any such subjective implication. In most instances, strict liability applies. *See* Kewanee Oil Co. v. Bicron Corp., 417 U.S. 470, 478, 180 U.S.P.Q. (BNA) 673, 677 (1974); Buck v. Jewell–La Salle Realty Co., 283 U.S. 191, 198 (1931);

effect significant changes in infringement liability in this field, which may be unintended and as yet unrecognized.[20]

The concept of infringement of legal rights in abstract ideas deserves study, therefore, because protecting such rights raises issues neither

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[20] Under present law, an invention relating to a mathematical abstraction may be claimed only as a process carried out in accordance with the abstraction or as an apparatus operating in accordance with it. *See In re* Alappat, 33 F.3d 1526, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994); *In re* Schrader, 22 F.3d 290, 22 U.S.P.Q.2d (BNA) 1455 (Fed. Cir. 1994); *Algorithm Conundrum, supra* note 4, at 177–78; *see also In re* Chatfield, 545 F.2d 152, 159, 191 U.S.P.Q. (BNA) 730, 736 (Fed. Cir. 1976) (Rich, J., dissenting) ("It has never been otherwise than perfectly clear to those desiring patent protection on inventions which are new and useful programs for general purpose computers (software) that the only way it could be obtained would be to describe and claim . . . the invention as a 'process' or a 'machine.'"), *cert. denied*, 434 U.S. 875, 195 U.S.P.Q. (BNA) 465 (1977).

Accordingly, a software retailer or other intermediary in the chain of distribution of computer programs can ordinarily be liable only for contributory infringement, not direct infringement, since the intermediary traffics only in a component or element of the patented entity, or something used in making the patented entity. (The patented entity is a machine operating in accordance with, or carrying out, an algorithm; or it is a machine process that carries out the algorithm. The algorithm is, of course, embodied in a computer program encoded in a memory device that the machine utilizes to execute the program.) Liability for contributory infringement requires that the accused party have knowledge that it is contributing to somebody else's direct infringement, Aro Mfg. Co. v. Convertible Top Replacement Co. (*Aro II*), 377 U.S. 476, 141 U.S.P.Q. (BNA) 681 (1964) (holding that knowledge of the patent and knowledge that the conduct aids in direct infringement must be established), and retailers and other intermediaries usually lack such knowledge. See *infra* notes 135–40 and accompanying text.

The Software Guidelines call for issuance of patents on floppy disks and other storage media or memory devices encoded with computer programs. Accordingly, a retailer or other intermediary trafficking in such floppy disks would commit direct infringement by selling the patented article. No knowledge of patent infringement is required in such a case of direct infringement. Because innocent infringement is not exempted, retailers and other intermediaries will become liable for selling software claimed in floppy-disk format, although until now they ordinarily were not liable. That is a sudden and remarkable change.

if it tries to do so it may act *ultra vires*.[18] That may well be so, and it is thus probable that significant protection of software abstractions under the patent laws can be achieved only by amending them substantially, so that for the first time they become able to provide legal protection for abstract ideas.[19]

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[18] If the PTO misinterprets the statute, and grants patents that under the statute it ought not grant, the PTO acts *ultra vires*. The only countermeasure legally available, however, would appear to be challenging a decision made in accordance with the Software Guidelines in the course of collateral review of a patent grant. Invalidity of a patent is a statutory defense. *See* 35 U.S.C. § 282 (1994). Thus, a defendant in a patent infringement case may assert that the allegedly infringed patent is invalid under section 101. *See* Arrhythmia Research Technology, Inc. v. Corazonix Corp., 958 F.2d 1053, 22 U.S.P.Q.2d (BNA) 1033 (Fed. Cir. 1992) (holding computer–related patent not invalid under section 101); State Street Bank & Trust Co. v. Signature Fin. Group, Inc., 927 F. Supp. 502, 38 U.S.P.Q.2d (BNA) 1530 (D. Mass. 1996) (holding patent on computerized accounting system invalid under section 101 because directed to abstract idea). It would appear that no one can prevent the PTO from issuing such patents in the first place, however, *ultra vires* or no. *See* Animal Legal Defense Fund v. Quigg, 932 F.2d 920, 18 U.S.P.Q.2d (BNA) 1677 (Fed. Cir. 1991).

[19] Under the present statute, patents may not be granted on abstract ideas, such as algorithms as such. Diamond v. Diehr, 450 U.S. 175, 185–87, 209 U.S.P.Q. (BNA) 1, 7–8 (1981); Gottschalk v. Benson, 409 U.S. 63, 71–72, 175 U.S.P.Q. (BNA) 673, 677 (1972); *In re* Trovato, 42 F.3d 1376, 1381, 33 U.S.P.Q.2d (BNA) 1194, 1198 (Fed. Cir. 1994), *vacated on other grounds*, 60 F.3d 807, 35 U.S.P.Q.2d (BNA) 1570 (Fed. Cir. 1995); *In re* Warmerdam, 33 F.3d 1354, 1360, 31 U.S.P.Q.2d (BNA) 1754, 1759 (Fed. Cir. 1994); *In re* Alappat, 33 F.3d 1526, 1542–43, 31 U.S.P.Q.2d (BNA) 1545, 1555–57 (Fed. Cir. 1994) (holding that certain types of mathematical subject matter, standing alone, are nothing more than abstract ideas and are thus not entitled to patent protection).

The PTO has some rulemaking power, *see* 35 U.S.C. § 6 (1994), to prescribe "regulations, not inconsistent with law, for the conduct of proceedings within the" PTO. Whether a mathematical abstraction is patentable appears to be well beyond the mere conduct of proceedings within the PTO, and it does seem "inconsistent with law" to grant patents on subject matter that court decisions, such as those cited in the preceding paragraph, say is unpatentable. Patent validity, including issues as to what is statutory subject matter, *see* 35 U.S.C. § 101 (1994), is not a matter confided to agency discretion; it is an issue of law. *See* Graham v. John Deere Co., 383 U.S. 1, 17, 148 U.S.P.Q. (BNA) 459, 466–67 (1966). Thus, "[i]f there is a divergence of views between the courts and the Patent Office, and the divergence proceeds from a different interpretation of the statute,

illusory promise, however, for what the PTO will actually deliver remains to be seen.[17] Moreover, the PTO may not be able to deliver any significant

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of the PTO's confession of error to the Federal Circuit in *In re* Beauregard, 53 F.3d 1583, 35 U.S.P.Q.2d (BNA) 1383 (Fed. Cir. 1995). That case was an appeal from a PTO decision denying a patent on a so-called article of manufacture consisting of a storage medium (e.g., floppy disk) encoded with machine-readable computer program code for carrying out a specified algorithm.

[17] The Software Guidelines are Delphic, and leave many critical issues unresolved. It will not be clear for a long time what kind of software abstraction patents the PTO will allow.

In some places, the Software Guidelines suggest that the PTO will allow a patent on any algorithm as long as it is claimed as a floppy disk encoded with a computer program for carrying out the algorithm. Section B(1)(c)(ii) of the original version of the guidelines stated that examiners should "[r]ely on the . . . presumption" that a computer-readable memory (i.e., floppy disk, hard disk, EPROM, or DRAM) "that can be used to direct a computer to function in a particular manner when used by the computer is a statutory 'article of manufacture.'" 60 Fed. Reg. at 28,778. Section (IV)(B)(1) of the final version of the Software Guidelines states: "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory [i.e., permissibly patentable] in most cases." 61 Fed. Reg. at 7,481. In an immediately preceding passage, the PTO explains that "functional descriptive material" means computer programs or data structures. *Id.* In the same vein, the Software Guidelines draw a supposedly critical distinction between computer programs claimed as "listings per se" and "a claimed computer-readable medium encoded with a computer program." The latter, in contrast to the former, defines "structural and functional interrelationships between the computer program and the medium which permit the computer program's functionality to be realized, and thus is statutory." *Id.* at 7,482.

Apparently, the Software Guidelines instruct the examining staff to reject claims to computer program subject matter if claimed apart from a computer-readable medium, but to allow them—if they are novel and unobvious—if claimed as encoded in such a medium. The Software Guidelines thus seem to promise patents on algorithms claimed as encoded floppy disks and to prohibit patents only on algorithms claimed as such.

Elsewhere, however, the Software Guidelines state that a computer-related procedure that does nothing more than manipulate abstract ideas, such as when solving a mathematical problem, is

since intellectual property rights in ideas do not exist, they cannot, as yet, be infringed. This article also attempts to implement the concept of infringement of these nonexistent "idea rights" in specific statutory language, to illustrate the author's conclusions and proposals in concrete terms.

Why would anyone, reader or author, want to consider what it would mean to infringe nonexistent intellectual property rights? Is it an exercise that sharpens the acuity of one's thinking or builds one's character, as may the study of the grammar of dead languages? Perhaps, but that is not the author's intent.

The concept of infringement of rights in software abstractions or ideas deserves study, because it is becoming increasingly likely that traditional intellectual property law is about to be modified to provide rights in such software abstractions. It is recognized that much, if not most, of the value of computer program software products lies in their abstract aspects rather than in their literal code.[12] Until recently, proponents of protection of rights in software abstractions were optimistic of gaining such protection

idea, *see* Brenner v. Manson, 383 U.S. 519, 534–35 (1966); O'Reilly v. Morse, 56 U.S. (15 How.) 62, 113 (1853), or preempt the access of software practitioners to the necessary tools of their trade, *see* Parker v. Flook, 437 U.S. 584, 589, 198 U.S.P.Q. (BNA) 193, 197 (1978); Gottschalk v. Benson, 409 U.S. 63, 67, 175 U.S.P.Q. (BNA) 673, 675 (1972).

[12] *See, e.g.*, Lotus Dev. Corp. v. Paperback Software Int'l, 740 F. Supp. 37, 56, 68, 15 U.S.P.Q.2d (BNA) 1577, 1581, 1589–90 (D. Mass. 1990) (finding that bulk of creative work in creating computer program is in conceptualization of the program and its user interface, rather than in coding program, and that user interface is very substantial factor causing success of 1-2-3 program); Richard H. Stern, *Legal Protection of Screen Displays and Other User Interfaces for Computers: A Problem in Balancing Incentives for Creation Against Need for Free Access to the Utilitarian*, 14 COLUM.-VLA J.L. & ARTS 283, 291, 298–300 (1990) (collecting comments on economic value of nonliteral aspects of computer programs).

business,[6] programming languages,[7] and instructions sets.[8] These intellectual

For a discussion of the case law on patenting algorithms from the first Supreme Court decision, Gottschalk v. Benson, 409 U.S. 63 (1972), through the end of 1994, see Richard H. Stern, *Solving the Algorithm Conundrum: After 1994 in the Federal Circuit, Patent Law Needs a Radical Algorithmectomy*, 22 AIPLA Q.J. 167, 173–94 (1994) [hereinafter *Algorithm Conundrum*].

[5] A data structure is a physical or logical relationship among elements of data, intended for use in carrying out particular data manipulations. IEEE STANDARD COMPUTER DICTIONARY 62 (1990). More generally, a data structure is a scheme or plan of organization of information, such as that of information stored in a computer's memory. A possible non–computer analogy for a data structure is a scheme or plan of organization of data written on a piece of paper. *Cf.* Baker v. Selden, 101 U.S. 99 (1879) (holding that system of double entry bookkeeping described in book was not within scope of copyright in book; accounting sheets used to practice system thus were not within scope of copyright in book). The *Baker* decision, codified in 17 U.S.C. § 102(b) (1994), may thus be regarded as denying copyright protection to a type of data structure because it is an "idea."

[6] *See In re* Schrader, 22 F.3d 290, 49 U.S.P.Q.2d (BNA) 1455 (Fed. Cir. 1994) (denying patentability of computerized method of doing business on grounds that it was algorithmic in nature).

[7] *See* Lotus Dev. Corp. v. Borland Int'l, 49 F.3d 807, 34 U.S.P.Q.2d (BNA) 1014 (1st Cir. 1995), *rev'g* 799 F. Supp. 203 (D. Mass. 1992), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996) (per curiam) (holding command structure of spreadsheet program, i.e., syntax of its programming language, uncopyrightable "method").

[8] An instruction set is a set of operations that a microprocessor or other processing device will perform, or that a programming language includes. The term "instruction" has several meanings. One meaning is "a statement or expression," of which the following are examples: INCREMENT a, MOVE (a,b), GOTO alpha. (The upper case parts of these instructions are sometimes termed "operations" or "operators" and the lower case parts, "operands.") These expressions mean, respectively: Increase the number in Register A by 1, Move the number in Register A to Register B, and Go to (unconditionally jump to) that place in the program being executed which is labelled "alpha." The first two expressions operate on data objects, and state steps to be performed in the execution of a computer program; the third is a control structure, which operates to specify the sequence or flow of operations in a computer program.

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(g) No action shall be brought under this section by reason of any use of a deceased personality's name, voice, signature, photograph, or likeness occurring after the expiration of 50 years from the death of the deceased personality.

(h) As used in this section, "deceased personality" means any natural person whose name, voice, signature, photograph, or likeness has commercial value at the time of his or her death, whether or not during the lifetime of that natural person the person used his or her name, voice, signature, photograph, or likeness on or in products, merchandise or goods, or for purposes of advertising or selling, or solicitation of purchase of, products, merchandise, goods or service. A "deceased personality" shall include, without limitation, any such natural person who has died within 50 years prior to January 1, 1985.

(i) As used in this section, "photograph" means any photograph or photographic reproduction, still or moving, or any video tape or live television transmission, of any person, such that the deceased personality is readily identifiable. A deceased personality shall be deemed to be readily identifiable from a photograph when one who views the photograph with the naked eye can reasonably determine who the person depicted in the photograph is.

(j) For purposes of this section, a use of a name, voice, signature, photograph, or likeness in connection with any news, public affairs, or sports broadcast or account, or any political campaign, shall not constitute a use for which consent is required under subdivision (a).

(k) The use of a name, voice, signature, photograph, or likeness in a commercial medium shall not constitute a use for which consent is required under subdivision (a) solely because the material containing the use is commercially sponsored or contains paid advertising. Rather it shall be a question of fact whether or not the use of the deceased personality's name, voice, signature, photograph, or likeness was so directly connected with the commercial sponsorship or with the paid advertising as to constitute a use for which consent is required under subdivision (a).

(l) Nothing in this section shall apply to the owners or employees of any medium used for advertising, including, but not limited to, newspapers, magazines, radio and television networks and stations,

disseminated, unless it is established that such owners or employees had knowledge of the unauthorized use of the person's name, voice, signature, photograph, or likeness as prohibited by this section.

(g) The remedies provided for in this section are cumulative and shall be in addition to any others provided for by law.

Cal. Civ. Code § 990 (1995)

§ 990. Deceased personality

(a) Any person who uses a deceased personality's name, voice, signature, photograph, or likeness, in any manner, on or in products, merchandise, or goods, or for purposes of advertising or selling, or soliciting purchases of, products, merchandise, goods, or services, without prior consent from the person or persons specified in subdivision (c), shall be liable for any damages sustained by the person or persons injured as a result thereof. In addition, in any action brought under this section, the person who violated the section shall be liable to the injured party or parties in an amount equal to the greater of seven hundred fifty dollars ($ 750) or the actual damages suffered by the injured party or parties, as a result of the unauthorized use, and any profits from the unauthorized use that are attributable to the use and are not taken into account in computing the actual damages. In establishing these profits, the injured party or parties shall be required to present proof only of the gross revenue attributable to the use and the person who violated the section is required to prove his or her deductible expenses. Punitive damages may also be awarded to the injured party or parties. The prevailing party or parties in any action under this section shall also be entitled to attorneys' fees and costs.

(b) The rights recognized under this section are property rights, freely transferable, in whole or in part, by contract or by means of trust or testamentary documents, whether the transfer occurs before the death of the deceased personality, by the deceased personality or his or her transferees, or, after the death of the deceased personality, by the person or persons in whom the rights vest under this section or the transferees of that person or persons.

(c) The consent required by this section shall be exercisable by the person or persons to whom the right of consent (or portion thereof) has

of with such name, portrait or picture used in connection therewith; or from using the name, portrait or picture of any author, composer or artist in connection with his literary, musical or artistic productions which he has sold or disposed of with such name, portrait or picture used in connection therewith.

Cal. Civ. Code § 3344 (1995)

§ 3344. Unauthorized commercial use of name, voice, signature, photograph or likeness

(a) Any person who knowingly uses another's name, voice, signature, photograph, or likeness, in any manner, on or in products, merchandise, or goods, or for purposes of advertising or selling, or soliciting purchases of, products, merchandise, goods or services, without such person's prior consent, or, in the case of a minor, the prior consent of his parent or legal guardian, shall be liable for any damages sustained by the person or persons injured as a result thereof. In addition, in any action brought under this section, the person who violated the section shall be liable to the injured party or parties in an amount equal to the greater of seven hundred fifty dollars ($ 750) or the actual damages suffered by him or her as a result of the unauthorized use, and any profits from the unauthorized use that are attributable to the use and are not taken into account in computing the actual damages. In establishing such profits, the injured party or parties are required to present proof only of the gross revenue attributable to such use, and the person who violated this section is required to prove his or her deductible expenses. Punitive damages may also be awarded to the injured party or parties. The prevailing party in any action under this section shall also be entitled to attorney's fees and costs.

(b) As used in this section, "photograph" means any photograph or photographic reproduction, still or moving, or any videotape or live television transmission, of any person, such that the person is readily identifiable.

(1) A person shall be deemed to be readily identifiable from a photograph when one who views the photograph with the naked eye can reasonably determine that the person depicted in the photograph is the same person who is complaining of its unauthorized use.

Goldberg Productions, the plaintiff, nephew of Rudolph Valentino, a world-renowned silent motion picture actor, claimed he had a protectable proprietary interest in the commercial uses of Valentino's name, likeness, and personality.[136] The California Supreme Court relied upon *Lugosi* and held that under California common law, there is no post mortem right of publicity. However, section 990 of the California Civil Code was amended in 1985 to provide statutory post mortem rights. This section provides post mortem rights for fifty years after the death of the individual.[137] Therefore, had Valentino's or Lugosi's heirs brought their actions after the effective date of the 1985 amendments, they may have been afforded a remedy, provided, of course, there was compliance with all sections of the provision.

VIII. CONCLUSION

Although sweeping generalizations about the right of publicity are unbefitting, this legal tenet possesses characteristic traits which are predictable. The right of publicity is governed by state law and applicable statutory and common laws must be mindfully observed. For the most part, the right is a personal property right which exhibits the attributes of intellectual property. While the right of publicity was begotten due to the inadequacies of the right of privacy, it is important to differentiate these legal doctrines to avoid the confusion depicted by lower court decisions prior to the U.S. Supreme Court's decision in *Zacchini*. Accordingly, a right of publicity claim must be analyzed with a keen eye toward applicable state law as interpreted by the decisions of the pertinent courts.

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[136] *Guglielmi*, 603 P.2d at 456, 205 U.S.P.Q. (BNA) at 1116-17.

[137] *See* CAL. CIV. CODE § 990(g) (1995) (*see* Appendix).

Inc.,[124] the district court stated that if faced with this issue, the Utah Supreme Court would recognize the common law right of publicity and would follow "what appears to be the majority and modern rule that the common law right of publicity survives the death of a subject person in cases where he or she transferred or otherwise exploited such rights while alive."[125] The court apparently relied upon the Restatement (Second) of Torts as being consistent with this view. This conclusion appears to be flawed in that it is neither the majority nor the modern rule that the right of publicity must be commercially exploited prior to the person's death.

The more apt view is exemplified by the Eleventh Circuit's decision in *Martin Luther King*, discussed above, wherein that court, applying Georgia law, analyzed whether the owner of a right of publicity must have commercially exploited that right for it to survive.[126] Although Georgia law is being applied, the underlying rationale seemingly should have applied to the District Court of Utah's decision to produce a different result. The Eleventh Circuit in *Martin Luther King* stated: "In our view, a person who avoids exploitation during life is entitled to have his image protected against exploitation after death just as much if not more than a person who exploited his image during life."[127] The court proffered that Dr. King could have exploited his name and likeness during his lifetime, but just because he did not choose to take that opportunity does not mean that others now have the right to use his name and likeness in ways he himself chose not to.[128] Therefore, the Eleventh Circuit's analysis in *Martin Luther King* depicts the majority and modern view that the right of publicity does survive the death of its owner and commercial exploitation during the celebrity's lifetime is unnecessary.

A minority of courts, however, have found that the right of publicity does not survive the death of its owner. More specifically, courts have

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[124] 736 F. Supp. 245, 16 U.S.P.Q.2d (BNA) 1063 (D. Utah 1990).

[125] *Id.* at 252, 16 U.S.P.Q.2d (BNA) at 1068.

[126] Martin Luther King, Jr. Ctr. for Social Change v. American Heritage Prods., 694 F.2d 674, 682-83 (11th Cir. 1983).

[127] *Id.* at 683.

[128] *Id.*

The modern, and majority, common law view holds that the right of publicity is proprietary in nature, survives the death of its owner, and is inheritable and devisable.[112] In *Martin Luther King, Jr. Ctr. for Social Change v. American Heritage Prods.*, the Eleventh Circuit, applying Georgia law in a case of first impression, found that the right of publicity survives the death of its owner and is thus inheritable and devisable.[113] In that case, the plaintiffs were Coretta Scott King, as Administratrix of Dr. King's estate, and Motown Record Corporation, the assignee of the rights to several of Dr. King's copyrighted speeches. The defendant manufactured and sold plastic busts of Dr. Martin Luther King, Jr., and advertised the busts in various publications. The advertisments stated that contributions would be made to the King Center for Social Change; however, only three percent of the sales price was actually contributed. The plaintiffs brought a right of publicity suit against the defendant claiming that Dr. King's right of publicity passed to his heirs and assignees upon his death. The defendant contended that no such right existed under Georgia law, arguing that the right of publicity does not survive the death of the celebrity.[114] The court interpreted Georgia common law and, after thorough analysis of findings from other jurisdictions, concluded that the right of publicity survives the death of its owner and that his or her assignees and heirs have standing to enforce the proprietary right.[115] The court's analysis reaching this conclusion was that

> [r]ecognition of the right of publicity rewards and thereby encourages effort and creativity. If the right of publicity dies with the celebrity, the economic value of the right of publicity during life would be diminished because the celebrity's untimely death would seriously impair, if not

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[112] *See* Martin Luther King, Jr. Ctr. for Social Change, Inc. v. American Heritage Prods., 694 F.2d 674, 682 (11th Cir. 1983); McFarland v. Miller, 14 F.3d 912, 917, 29 U.S.P.Q.2d (BNA) 1586, 1590 (3d Cir. 1994); Jim Henson Prods. v. John T. Brady & Assocs., 867 F. Supp. 175, 189-90, 34 U.S.P.Q.2d (BNA) 1001, 1013 (S.D.N.Y. 1994); Price v. Hal Roach Studios, Inc., 400 F. Supp. 836, 844 (S.D.N.Y. 1975); *cf.* N.Y. CIV. RIGHTS LAW § 51 (1994) (see Appendix) (although New York has no common law right of publicity by statute, post mortem rights are provided for by statute).

[113] *Martin Luther King*, 694 F.2d at 682.

[114] *Id.* at 675.

[115] *Id.* at 682.

New York's publicity statute was recently interpreted by the Supreme Court of New York, Appellate Division, in *Hampton v. Guare*.[103] In that case, the plaintiff had been convicted of several criminal offenses, including criminal impersonation in a scam wherein the plaintiff convinced several affluent New York families that he was the son of actor Sidney Poitier. The families welcomed him into their homes and gave him money and other articles of value. The defendants were the author, producers, publisher, and purchaser of film rights to the hit play *Six Degrees of Separation*, which was inspired by the plaintiff's real life scam. The court, interpreting sections 50 and 51 of the New York Civil Rights Law, found that "plaintiff's name, portrait or picture were not used in the play" as required by the statute, and that works of fiction and satire do not fit within the narrow scope of statutory wording "advertising" and "trade."[104] Accordingly, the plaintiff's statutory claim failed and the plaintiff was without relief because New York does not recognize a common law right of publicity.

A plaintiff in a forum applying California law, however, may assert both a statutory and common law right of publicity.[105] For example, in *Eastwood v. Superior Court*,[106] the Court of Appeals of California interpreted actor Clint Eastwood's right of publicity claims under both California common law and section 3344 of the California Civil Code. The defendant, *The National Enquirer* weekly newspaper, published an article about Eastwood's alleged romantic involvement with two other celebrities. On the cover of the newspaper was a photograph of Eastwood and one of the two women which carried the headline "Clint Eastwood in Love Triangle."[107] The court recognized the viability of both a common law and statutory cause of action under California law and commented on distinctions between the

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[103] 600 N.Y.S.2d 57 (N.Y. App. Div. 1993), *appeal denied*, 625 N.E.2d 590 (N.Y. 1993). The court also held that the statute preempted any common law cause of action. *Id.* at 58-59.

[104] *Id.*

[105] *See, e.g.*, White v. Samsung Elec. Am., Inc., 971 F.2d 1395, 1397, 23 U.S.P.Q.2d (BNA) 1583, 1584 (9th Cir. 1992), *reh'g en banc denied*, 989 F.2d 1512, 26 U.S.P.Q.2d (BNA) 1362 (9th Cir. 1993), *cert. denied*, 113 S. Ct. 2443 (1993). Included in the Appendix to this Article is CAL. CIV. CODE § 3344.

[106] 198 Cal. Rptr. 342 (Cal. Ct. App. 1983).

[107] *Id.* at 345.

the copyright laws, then that statute will be preempted.[93] However, because there is no correlating federal statutes directly concerning the right of publicity, federal preemption issues infrequently occur.

For example, in *Waits*, wherein the defendants deliberately imitated Waits' "raspy" voice in a Frito-Lay commercial, the defendants asserted that the right of publicity is preempted by federal copyright law. The court, however, dispelled this argument by stating that the right of publicity is distinct from copyright infringement because the defendants did not copy, for instance, a recording of Waits' performance, but, rather, imitated his voice and the style for which Waits was distinctively and widely known. Therefore, Waits had rights protected by the right of publicity distinct from his rights under the copyright law, and California's right of publicity was not found to conflict with the federal copyright laws.[94]

VI. STATE STATUTES

Under choice of law rules, a court will apply the applicable state's common law and statutory law. Choice of law considerations become imperative when deciding where to bring suit because not all states possess a right of publicity under its common law or any statutory provision.[95] According to McCarthy, the courts of fifteen states have expressly recognized a common law right of publicity.[96] Of those fifteen states, four

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[93] *See, e.g.*, Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 9 U.S.P.Q.2d (BNA) 1847 (1989).

[94] *Waits*, 978 F.2d at 1100, 23 U.S.P.Q.2d (BNA) at 1725.

[95] *Compare* Pirone v. MacMillan, Inc., 894 F.2d 579, 585, 13 U.S.P.Q.2d (BNA) 1799, 1803 (2d Cir. 1990) (dismissing common law claim by stating New York's state statutory provisions concerning right of publicity are exclusive) *with* White v. Samsung Elec. Am., Inc., 971 F.2d 1395, 1397, 23 U.S.P.Q.2d (BNA) 1583, 1584 (9th Cir. 1992), *reh'g en banc denied*, 989 F.2d 1512, 26 U.S.P.Q.2d (BNA) 1362 (9th Cir. 1993), *cert. denied*, 113 S. Ct. 2443 (1993) (applying California law recognizing both statutory and common law right of publicity).

[96] California, Connecticut, Florida, Georgia, Hawaii, Illinois, Michigan, Minnesota, Missouri, New Jersey, Ohio, Pennsylvania, Texas, Utah, and Wisconsin. MCCARTHY, *supra* note 1, § 6.1[B].

a "900" number phone survey to determine which member of the group was the teen readers' favorite. The Ninth Circuit upheld the district court finding of no infringement of the New Kids' right of publicity because the use of their identities was "related to the constitutionally protected activity of news gathering and dissemination and not merely commercial exploitation."[80]

Non-commercial use of a celebrity's name in a film title was found protected and immune from right of publicity assertions in *Rogers v. Grimaldi*.[81] In that case, Ginger Rogers' and Fred Astaire's names were used in the title of the film "Ginger and Fred." The film pertained not to Rogers and Astaire, but to two Italian dancers who imitated Rogers and Astaire and were nicknamed "Ginger and Fred."[82] The Second Circuit, interpreting Oregon law, found that the title was related to the contents of the movie. Moreover, the use was "not a disguised advertisement for the sale of goods or services or a collateral commercial product."[83] Therefore, the use was deemed non-commercial and held to a high level of the First Amendment protections which thereby defeated the plaintiff's right of publicity allegation.[84]

2. The Parody Defense

First Amendment considerations are particularly portentous when a parody is involved.[85] Use of a celebrity's name or likeness in the form of a parody does not necessarily render the use non-commercial.[86] In a recent

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[80] *Id.* at 1546, 16 U.S.P.Q.2d (BNA) at 1286.

[81] 875 F.2d 994, 10 U.S.P.Q.2d (BNA) 1825 (2d Cir. 1989).

[82] *Id.* at 996-97, 10 U.S.P.Q.2d (BNA) at 1826.

[83] *Id.* at 1004-05, 10 U.S.P.Q.2d (BNA) at 1833.

[84] *Id.*

[85] *See, e.g.*, L.L. Bean, Inc. v. Drake Publishers, Inc., 811 F.2d 26, 1 U.S.P.Q.2d (BNA) 1753 (1st Cir.), *cert. denied, appeal dismissed*, 483 U.S. 1013 (1987).

[86] *See, e.g.*, White v. Samsung Elec. Am., Inc., 971 F.2d 1395, 1401, 23 U.S.P.Q.2d (BNA) 1583, 1588 (9th Cir. 1992), *reh'g en banc denied*, 989 F.2d 1512, 26 U.S.P.Q.2d (BNA) 1362 (9th Cir. 1993), *cert. denied*, 113 S. Ct. 2443

First Amendment hurdle is not insurmountable.[71] In *White*, the Ninth Circuit readily deemed Samsung Electronic's advertisements comprising a robot mimicking Vanna White as commercial speech because, in fact, it was a commercial advertisement.[72] Therefore, the First Amendment threshold was low, the need to protect free speech diminished, and the right of publicity claim was not barred by the First Amendment.[73]

In *Cher v. Forum International, Ltd.*,[74] Cher sued *Forum* magazine on the grounds that the magazine exploited her value as a celebrity without her consent by advertising its magazine using her name and picture in a manner that implied that she endorsed *Forum*. The controversy erupted when Cher granted an interview to a freelance writer for *Forum*, which published only a portion of the interview. *Forum* used a photograph of Cher in advertisements in issues of its own magazines and in other magazines promoting Cher's interview. The advertisements each expressly or impliedly stated that Cher endorsed *Forum* magazine. The Ninth Circuit found that if *Forum* merely had used Cher's photograph to promote the newsworthy interview, then First Amendment protections would apply.[75] *Forum* went

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[71] *See supra* Section II.A.; *see also* Town & Country Properties v. Riggins, 457 S.E.2d 356 (Va. 1995) (Plaintiff, former pro-football player John Riggins, sued his ex-wife who distributed advertisement flyers for the sale of her house. The flyer advertised that this was "JOHN RIGGINS' Former Home." Defendant asserted that her flyer was commercial speech protected by the First Amendment. The Supreme Court of Virginia, however, found that the real estate advertisement was not informational and not the type of commercial speech accorded constitutional protection). *But see* Paulsen v. Personality Posters, Inc., 299 N.Y.S.2d 501, 508 (1968) (The right of publicity "does not invest a prominent person with the right to exploit financially every public use of name or picture.").

[72] *White*, 971 F.2d at 1401 n.3, 23 U.S.P.Q.2d (BNA) at 1588 n.3.

[73] *Id.*

[74] 692 F.2d 634, 217 U.S.P.Q. (BNA) 407 (9th Cir. 1982), *cert. denied*, 462 U.S. 1120 (1983).

[75] The interview was also sold to *Star* magazine, which published the entire interview and printed Cher's picture on its cover to promote the article. The Ninth Circuit found this speech protected by the First Amendment because *Star's* cover was merely an adjunction of the protected speech contained within the publication.

being that the consent may be express or implied and may be written or oral.[59]

Although once accepted, the fact that the plaintiff actively and willingly sought notoriety is no longer held to constitute an implied license to use the plaintiff's identity for commercial purposes.[60] Consent, in some states, may be implied by conduct. The defendant in *Newton*, for example, successfully argued that the plaintiff, by his conduct, consented to the use of his name.[61] Newton had stated in a letter to the defendant that he was "flattered" by the use of his name and that "[e]veryone . . . thinks it's exciting and so do I."[62] The plaintiff did not object to the use of his name until defendant rejected the plaintiff's proposed theme song for the television sitcom. Although plaintiff never uttered the words "I consent," the court found it obvious that he did consent and thus found no material issue of fact regarding consent to deny summary judgment in favor of the defendant.[63]

B. *Not A Protected Aspect Of Persona*

As discussed in Section III, an individual's name, nickname, likeness, voice, performance, closely associated object, attire, and mannerisms may be protected by the applicable state common law and/or statutory right of publicity. From a defensive perspective, the applicable state common and/or statutory law must be analyzed to determine the metes and bounds of protected persona. For example, California's right of publicity statute protects the name, likeness, photograph, and voice of an individual.[64] In

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[59] MCCARTHY, *supra* note 1, § 10.6[A].

[60] *See supra* note 8, discussing the illogical holding in O'Brien v. Pabst Sales Co., 124 F.2d 167 (5th Cir. 1941), *cert. denied*, 315 U.S. 823 (1942).

[61] Newton v. Thomason, 22 F.3d 1455, 30 U.S.P.Q.2d (BNA) 1633 (9th Cir. 1994).

[62] *Id.* at 1461, 30 U.S.P.Q.2d (BNA) at 1636.

[63] *Id.*

[64] CAL. CIV. CODE § 3344 (1995) (see Appendix); *see* White v. Samsung Elec. Am., Inc., 971 F.2d 1395, 1397, 23 U.S.P.Q.2d (BNA) 1583, 1585 (9th Cir. 1992), *reh'g en banc denied*, 989 F.2d 1512, 26 U.S.P.Q.2d (BNA) 1362 (9th Cir. 1993), *cert. denied*, 113 S. Ct. 2443 (1993).

of a person's identity or persona for a commercial purpose can give rise to one or both of these rights, but the damages recoverable will differ. In particular, the right of privacy will focus upon the mental distress that has occurred, and is a purely personal right. In contrast, the right of publicity focuses on the commercial interest involved, and a third person may possess this right.[50]

A trademark cause of action may lie when a person's name or likeness is used as a mark, i.e. in a manner identifying the person as the source of the goods or services sold. It is important to note, however, several differences between the two. First, the right of publicity protects the commercial value of a human identity or persona, whereas the law of trademarks protects the *use* of a word or symbol in such a way that it identifies a commercial source.[51] Second, every person has an inherent right of publicity, but the same is not true of the trademark or service mark in a person's name. Rights in such marks only arise if a name or picture is used as a mark. Third, the right of publicity is an inherent right possessed by everyone, whereas trademark or service mark rights only vest in connection with the sale of goods or services bearing the particular mark. Fourth, in trademark law, the likelihood of confusion analysis determines whether a trademark has been infringed, whereas a showing of likelihood of confusion is not necessary with the right of publicity. All that is required is that more than an insignificant number of people identify the identity or persona taken without authorization for commercial purposes as being that of the plaintiff.[52]

N.E.2d 582 (1978); PROSSER AND KEETON ON TORTS, *supra* note 4, Chapter 20; Dean Prosser, *Privacy*, 48 CAL. L. REV. 383 (1960).

[50] *Zacchini*, 433 U.S. at 573, 205 U.S.P.Q. (BNA) at 747.

[51] *See, e.g.*, Pirone v. MacMillan, Inc., 894 F.2d 579, 583, 13 U.S.P.Q.2d (BNA) 1799, 1802 (2d Cir. 1990); MCCARTHY, *supra* note 1, § 5.2.

[52] *See, e.g.*, Carson v. Here's Johnny Portable Toilets, Inc., 698 F.2d 831, 835, 218 U.S.P.Q. (BNA) 1, 4 (6th Cir. 1983).

"[g]enerally, the greater the fame or notoriety of the identity appropriated, the greater will be the extent of economic injuries suffered."[45] Thus, according to courts following the majority view, it is irrelevant whether the plaintiff is a celebrity because the level of attributive fame is relevant only in the calculation of damages.

C. *What Is A Commercial Purpose?*

As stated above, the right of publicity protects the taking of one's name or likeness for a commercial purpose without that person's consent. Determining what constitutes a commercial purpose has recently become an issue. This issue was addressed by the Ninth Circuit in *Newton v. Thomason*,[46] wherein country music singer Wood Newton sued the producers, among others, of the television show "Evening Shade" starring Burt Reynolds. Burt Reynolds' character was named "Wood Newton" in the series. Newton was a country music songwriter and performer who grew up in a small Arkansas town and played high school football for a team that was actually coached by one of the producers of the show. Newton's father, now deceased, owned a local hardware store. The fictional "Wood Newton" character was a high school football coach and former pro-football star who lived in a small Southern town modeled after Newton's, and one of the producer's, hometown. The character's father had the same name and occupation as Newton's father. The defendant promoted the new series with advertisements introducing Reynolds' character as "Wood Newton" and this suit ensued.

The court found that there was no commercial purpose in the use of the name "Wood Newton." Nothing in the advertisements indicated that Burt Reynolds character's name was associated with Newton or in any way resembled him.[47] Defendants gained no commercial advantage by using Newton's name as a result of his notoriety as a country western music

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[45] *Motschenbacher*, 498 F.2d at 524-25 n.11.

[46] 22 F.3d 1455, 30 U.S.P.Q.2d (BNA) 1633 (9th Cir. 1994).

[47] *Id.* at 1462, 30 U.S.P.Q.2d (BNA) at 1638.

its heart, the value of the right of publicity is associational. People link the person with the items the person endorses and, if that person is famous, that link has value."[34]

The court then focused on whether George McFarland was identifiable with the character Spanky and, if so, whether the right of publicity vests in the performer with whom the character has become identified. The court held that there may be a situation where an actor's screen persona becomes so associated with him or her that it becomes inseparable from the actor's own public image and, in these instances, the actor has a protectable right of publicity.[35] The court cited the following as examples of situations in which the actor's screen persona and public image are inseparable:[36] the character of a "schlemiel" persona that Woody Allen cultivated in the film "Annie Hall;"[37] the Marx Brothers' on-screen images and actions;[38] and the comic duo Stan Laurel and Oliver Hardy in their on-screen images.[39] In these cases, as in the case before the Third Circuit in *McFarland,* the actor developing the on-screen image had a right to exploit it superior to the rights of third parties who had nothing to do with the actor or the character identified with the actor.

On the other hand, if the actor is merely fulfilling a role and following a script of a third party, then the proprietary interest very well may not lie with the actor.[40] Fictitious examples referred to in *McFarland* are:

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[34] *Id.* at 919, 29 U.S.P.Q.2d (BNA) at 1592.

[35] *Id.* at 920, 29 U.S.P.Q.2d (BNA) at 1593.

[36] *Id.* at 921, 29 U.S.P.Q.2d (BNA) at 1593.

[37] Allen v. Men's World Outlet, Inc., 679 F. Supp. 360, 362, 371, 5 U.S.P.Q.2d (BNA) 1850, 1851, 1859 (S.D.N.Y. 1988).

[38] Groucho Marx Prods., Inc. v. Day & Night Co., 523 F. Supp. 485, 491, 212 U.S.P.Q. (BNA) 926, 930 (S.D.N.Y. 1981), *rev'd and remanded on other grounds,* 689 F.2d 317, 216 U.S.P.Q. (BNA) 553 (2d Cir. 1982).

[39] Price v. Hal Roach Studios, Inc., 400 F. Supp. 836, 843-44 (S.D.N.Y. 1975).

[40] *See, e.g.,* Lugosi v. Universal Pictures, 603 P.2d 425, 205 U.S.P.Q. (BNA) 1090 (Cal. 1979) (*per curiam*) (suggesting actor possesses no right in his portrayal of Dracula because it was another's character).

Motschenbacher v. R.J. Reynolds Tobacco Co.[27] The court in that case held that the unauthorized use of a picture of a distinctive race car of a famous professional race car driver violated his right of publicity even though his name or likeness was not used. The photograph depicted Motschenbacher's race car and Motschenbacher, in fact, was driving the car when the picture was shot, although he was indistinguishable. Nonetheless, the court stated that the markings on the plaintiff's car were so unique that one would likely infer that the person driving that car was the plaintiff.[28]

A nickname also may provide a person with a certain degree of identifiability, the taking of which would constitute an infringement of a right of publicity. For example, in *Ali v. Playgirl, Inc.*,[29] Mohammed Ali, the former Heavyweight Champion, sued *Playgirl* magazine under New York law for an invasion of the right of publicity. The magazine published a drawing of a nude black man sitting on a stool in the corner of a ring with the caption "Mystery Man" below. The accompanying verse, however, identified the figure as "The Greatest." The court stated that Mohammed Ali's identity was in fact taken, particularly because the verse "The Greatest" was utilized and is a nickname long synonymous with Ali. Similarly, in *Hirsch v. S.C. Johnson & Son, Inc.*,[30] the court held that the defendant's use of the name "Crazy Legs" on a shaving gel for women violated famous football player Elroy Hirsch's right of publicity. The nickname "Crazy Legs," as the nickname "The Greatest" in *Ali*, was identifiable to Hirsch and therefore the defendant violated his right of publicity.

Recognizable attire and mannerisms, too, have been found sufficiently protected by the right of publicity. In *White v. Samsung Electronics America, Inc.*,[31] the plaintiff was Vanna White, the hostess of the popular television game show "Wheel of Fortune." The defendant, Samsung

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[27] *Motschenbacher*, 498 F.2d at 826-27.

[28] *Id.*

[29] 447 F. Supp. 723, 206 U.S.P.Q. (BNA) 1021 (S.D.N.Y. 1978).

[30] 280 N.W.2d 129, 205 U.S.P.Q. (BNA) 920 (Wis. 1979).

[31] 971 F.2d 1395, 23 U.S.P.Q.2d (BNA) 1583 (9th Cir. 1992), *reh'g en banc denied*, 989 F.2d 1512, 26 U.S.P.Q.2d (BNA) 1362 (9th Cir. 1993), *cert. denied*, 113 S. Ct. 2443 (1993).

Third, the taking must have been for a commercial purpose. Each of these issues will be individually addressed.

A. *What Is Identifiable?*

The traditional right of publicity claim arises when the plaintiff's name or likeness has been taken without permission for a commercial advantage. However, as the right of publicity has evolved, the spectrum of identifiable persona has expanded.[18]

The phrase "Here's Johnny" constituted an identifiable persona of the comedian Johnny Carson in *Carson v. Here's Johnny Portable Toilets, Inc.*[19] The plaintiff, Johnny Carson, brought a right of publicity cause of action against Here's Johnny Portable Toilets, Inc., which was engaged in the business of renting and selling "Here's Johnny" portable toilets. The defendant asserted, however, that it did not use Carson's name or likeness and therefore is not liable for infringing Carson's right of publicity. As the Sixth Circuit explained:

> The right of publicity, as we have stated, is that a celebrity has a protected pecuniary interest in the commercial exploitation of his identity. If the celebrity's identity is commercially exploited, there has been an invasion of his right whether or not his 'name or likeness' is used. Carson's identity may be exploited even if his name, John W. Carson, or his picture is not used.[20]

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[18] Thus far, no jurisdiction has extended the right of publicity to non-humans. *See* MCCARTHY, *supra* note 1, § 4.8; Phillip E. Hassman, Annotation, *Invasion of Privacy by Use of a Picture of Plaintiff's Property for Advertising Purposes*, 87 A.L.R.3d 1279 (1978).

[19] 698 F.2d 831, 835, 218 U.S.P.Q. (BNA) 1, 4 (6th Cir. 1983) (applying Michigan law).

[20] *Id.*

article that has become the cornerstone of the right of publicity.[12] Nimmer aptly observed that the case law up to this point had defined privacy as a personal and nonassignable right. Under this analysis, the only right a plaintiff had was a release from suit for the invasion of privacy because plaintiffs had no property which could be contractually conveyed. Although the *Haelan* court refused to state whether or not a property right was involved, Nimmer's article has been relied upon for the proposition that the right of publicity is a property right. Nimmer's article further contemplates that the right of publicity is not limited to celebrities. Although celebrities are the stereotypical plaintiff in such cases, the right is available to everyone.[13]

The right of publicity finally reached adulthood, twenty-four years after its birth in the *Haelan* decision, when it was first formally recognized as an enforceable state law by the Supreme Court in *Zacchini v. Scripps-Howard Broadcasting Co.*,[14] the famed human cannonball case. In that case, the plaintiff was a circus performer and, more specifically, a human cannonball. The defendant was a television station whose reporter had taped the entire act of the human cannonball and aired it during a news segment. In its analysis of free speech and free press immunization with respect to the news broadcast, the Court consistently used the term "right of publicity" and referred to it as an established legal tenet. The Supreme Court formally heralded the right of publicity as a doctrine deserving a legal status detached from its right of privacy ancestry.[15] The 1953 *Haelan* decision, Nimmer's 1954 article, and the Supreme Court's acknowledgement in *Zacchini* are the genesis of what today has evolved into a very prolific state law cause of action of the right of publicity.

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[12] MCCARTHY, *supra* note 1, § 1.8 (citing Melville B. Nimmer, *The Right of Publicity*, 19 LAW & CONTEMP. PROBS. 203 (1954)).

[13] *Id.* However, this view is not followed by every court. *See infra* note 41.

[14] 433 U.S. 562, 563-64, 205 U.S.P.Q. (BNA) 741, 743-44 (1977), *on remand*, 376 N.E.2d 582 (Ohio 1978).

[15] *Zacchini* dealt with the "false light" type of invasion of privacy. Nonetheless, the Supreme Court recognized a state law created property right in human identity, the unpermitted taking of which infringes the right of publicity.

claimants to allege unpermitted use of plaintiff's identity for commercial purposes with damage to plaintiff's dignity.[5] Under the guise of tort law, recovery was measured by mental distress damages.[6] The quandary arose, however, when famous plaintiffs attempted to assert exploitation of their identities under a misappropriation theory of right of privacy. Courts believed famous plaintiffs did not have a right of privacy, i.e. the "right to be left alone," because plaintiffs' identity was already widely known.[7] Thus, famous plaintiffs were denied relief.[8]

In 1953 Judge Frank, in the *Haelan* case, coined the phrase "right of publicity" and recognized the inadequacies of the right of privacy under a misappropriation theory as it related to famous plaintiffs.[9] The underlying cause of action in *Haelan* was intentional interference with contractual relations. Both parties were chewing gum sellers, competing to obtain rights from professional baseball players to use their pictures on chewing gum cards. The plaintiff accused the defendant of knowingly inducing the ball players to authorize their pictures even though they had granted exclusive licenses to the plaintiff. The defendant, however, had obtained some grants from an independent agent who received grants from ball players and then assigned them to the defendant. Thus, the defendant could not be held liable for knowingly inducing this breach because the agent intervened without

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[5] *See, e.g.*, Pavesich v. New England Life Ins. Co., 50 S.E. 68, 73 (Ga. 1905) (granting damages for "wounded feelings"); Martin Luther King Jr. Ctr. for Social Change, Inc. v. American Heritage Prods., Inc., 296 S.E.2d 697, 216 U.S.P.Q. (BNA) 711 (Ga. 1982) (distinguishing between damages to the appropriated publicity value under a right of publicity claim and damages involving hurt feelings under a right of privacy claim).

[6] MCCARTHY, *supra* note 1, § 1.6.

[7] *Id.*

[8] *See, e.g.*, O'Brien v. Pabst Sales Co., 124 F.2d 167, 170 (5th Cir. 1941), *cert. denied*, 315 U.S. 823 (1942). The beer company, Pabst, used a collegiate photograph of David O'Brien, a famous baseball player, without his consent or express endorsement. The court illogically found that O'Brien, as a baseball player, actively sought publicity and suffered no mental distress by defendant's conduct. Thus, he could not complain about defendant's improper use of his identity.

[9] Haelan Labs., Inc. v. Topps Chewing Gum, Inc., 202 F.2d 866, 868 (2d Cir.), *cert. denied*, 346 U.S. 816 (1953).

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VI. CONCLUSION

Copyright protection for architectural works was established by enactment of the Architectural Works Copyright Protection Act of 1990. Although the public has been slow to embrace the newest category of protected subject matter, the number of recently reported cases indicates that the public's willingness to assert its rights in architectural works is gathering momentum. Thus far, architects and builders of residential homes have utilized the new protection to enjoin competitors from building substantially similar homes based on registered designs. The courts have responded by applying the traditional theories of validity, infringement and damages to architectural works cases. The full limits of the scope of protection available under section 102(a)(8), however, have yet to be tested.

create three levels of entrance.[136] In much the same way that Wright's *Falling Water* merges with its natural wooded setting and cascading waterfall, the barn near Bridgewater (an otherwise obtrusive structure) blends in virtual harmony with the rolling Vermont countryside. Like Roche's design of the Union Carbide office complex, farm structures may be designed in a variety of unexpected shapes which are not "absolutely functionally required." Circular and polygonal barns were first introduced in the United States during the second half of the nineteenth century.[137] The design of the great circular Shaker barn at Hancock, Massachusetts, which was completed in 1865, "attracted much attention as a new and exotic shape" and was widely copied during the 1880's.[138] Like the interior layout of the Shaker round barn, the designs of conventionally-shaped barns often embody a unique

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[136] ERIC ARTHUR & DUDLEY WITNEY, THE BARN: A VANISHING LANDMARK IN NORTH AMERICA, 51-52 b, c (1972) (photographs and accompanying text). From the streetside entrance, located at the uppermost level, the barn appears modest and inconspicuous by even American design standards. It is only from the lowermost level, accessed at the base of a four-story facade at the bottom of the hill, that the true magnificence of the structure is evident. *Id. But see* East/West Venture v. Wurmfeld Assoc., 722 F. Supp. 1064, 1068, 13 U.S.P.Q.2d (BNA) 1908, 1910 (S.D.N.Y. 1989) (holding that "to demonstrate infringement something unique in the plans not demanded by the uniqueness of the site must be copied").

[137] ARTHUR & WITNEY, *supra* note 136, at 147.

[138] *Id.* at 146 a. The authors further state, "[l]ike all great architecture, its interior is inseparable from the exterior and is, if anything, even more dramatic. *Id.* The interior of the Great Shaker round barn featured an annular feed alley from which hay from the circular inner mow could be forked to cattle stanchions ringing the perimeter of the lowermost level. The second level of the barn housed the circular drivefloor for the wagons with a knee-high parapet from which everything in the barn, both horizontally and vertically, could be observed. Like the rafters, the floorboards of both levels of the barn radiate outward from the central eight-sided ventilating shaft. *Id.* at 152-53 a-d, 154-55 a, b (photographs and accompanying text). Another noteworthy circular barn design is located near Glen, New York. The single-story clapboard barn features a battlement along its flat roof. A multitude of square windows circumscribing the exterior of the structure remind one of the gunwales of a ship. The barn is so revered that the road adjacent to the barn has been renamed "Round Barn Road." *Id.* at 161 c, d (photographs and accompanying text). *See generally id.* at 162-71 for a discussion of other barn designs of unusual shape including octagonal, extended octagonal, and twelve-sided.

Bridge crossing the Mississippi at LaClede's Landing[130] represents individual standard features which should not be afforded protection because those elements are dictated by the function of carrying freight cars.

Even though there are admittedly fewer aspects to a bridge design than to a building design, the assortment of available standard design features would not be exhausted by bridge architects because only the overall form and the arrangement and composition of spaces and elements that are not functionally required would be subject to protection. In any event, there are fewer bridges than buildings and because so much of the structure of a bridge is dictated by functional concerns, infringement is likely to require a "chinese copy" of the design.[131] Why then, practitioners should ask, does the original and distinctive design of the non-functional elements of a bridge not warrant the same protection Congress and the Copyright Office have afforded to the artistic designs of pergolas, gazebos, and garden pavilions?

The first case raising equitable economic concerns regarding copyright protection for architectural works may very well involve the design of a mobile home or farm structure. The Copyright Office, relying on the legislative history of the Architectural Works Act, added the proviso that the term "building" applies to structures that are intended to be both permanent and stationary.[132] A mobile home, however, is not always mobile.[133] Oftentimes, a mobile home is intended to be as permanent and

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[130] KOSTOF, *supra* note 125, at 323 (photograph).

[131] An argument may be made that infringement of architectural works should be determined according to a sliding-scale. If the work is one in which functional considerations dominate and there are a limited number of expressions available to the architect, infringement should require verbatim copying. On the other hand, if the work is one in which there are a myriad of expressive designs, the amount of "substantial similarity" required to sustain infringement should be considerably less.

[132] *See supra* text accompanying note 70. The Copyright Office derived the "permanent and stationary" requirement from the examples of protectable buildings provided by Congress.

[133] *See* KOSTOF, *supra* note 125, at 62 ("Actually, mobile homes have little

protection to structures beyond the definition of "building" promulgated by Congress and the Copyright Office.

The overall form or the arrangement and composition of spaces and elements of the design of a structure will be copied only if there is an economic benefit to be derived by imitating the distinctive features of the design. Thus, there is no reason *not* to provide protection for the same artistic elements of the design of a structure which would be protected if the structure were a building inhabited or used by humans. On the other hand, if the overall form or the arrangement and composition of spaces and elements of the design of a structure is void of distinctive, non-functional features, any economic benefit gained by copying the structure will not be a result of copying the protectable elements of the design, but rather will result from copying the purely functional (unprotectable) elements of the design.

Congress implicitly denied copyright protection for bridges[122] and the Copyright Office explicitly denied copyright protection for mobile homes.[123] Barns and other farm structures such as grain silos[124] will presumably be denied copyright protection because they are not humanly habitable and are arguably not used by humans in the same sense as churches, pergolas, gazebos, and garden pavilions. However, the artistic design features of structures such as bridges, mobile homes, and barns are equally deserving of protection even though they do not meet the strict definition of "building" promulgated by Congress and the Copyright Office.

Many bridges other than the *Golden Gate Bridge* were designed with an artistic creativity all their own. For example, the *Wilson Bridge* over the Conocoheague Creek outside Hagerstown, Maryland, exhibits distinctive semi-circular, pointed footings at each end of its stone arches.[125] The footings

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[122] *See supra* text accompanying note 61.

[123] 37 C.F.R. § 202.11(d)(1)(1992); *see supra* text accompanying note 71.

[124] *See* Pollack, *supra* note 111, at 876 ("Questions remain as to whether such works as . . . grain silos . . . are 'buildings' for copyright purposes.").

[125] SPIRO KOSTOF, AMERICA BY DESIGN 148 (1987) (photograph and text). The *Wilson Bridge* was built in 1819 as part of the National Road linking the Eastern seaboard and the Ohio River back country. *Id.*

of "three-dimensional structures" in favor of narrower coverage.[112] The Copyright Office further restricted the subject matter eligible for copyright protection under section 102(a)(8) by interpreting the term "building" to mean first, "humanly habitable structures and structures that are used, but not inhabited by human beings," and second, "structures which are intended to be both permanent and stationary."[113] Broader protection for architectural works will not impact adversely societal interest by increasing the cost of the nation's infrastructure.[114] By definition, the individual standard features of any structure (including interstate highway bridges, cloverleafs, canals, dams, and pedestrian walkways) are not protectable and may be reproduced with impunity. Thus, the likely effect, if any, of extending copyright protection to the distinctive overall form, or shape, of three-dimensional structures will be to make the nation's infrastructure more decorative, but not less functional.[115]

Although Congress and the Copyright Office took a restrictive view of copyright protection for architectural works,[116] commentators agree that the Berne Convention does not require member countries to limit protection for architectural works to buildings. In fact, most Berne Convention countries grant copyright protection to any structure which displays only a

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[112] *See supra* part II.

[113] *See supra* part II; 57 Fed. Reg. 45,307, *supra* note 52, § 202.11(b)(2).

[114] *But see supra* text accompanying note 62.

[115] The decorative slotted turrets of the world's largest dam at the time, Fort Peck on the Missouri River, adorned the first cover of *Life* magazine. One can speculate that the decorative design of the Peck Dam, which was a 1930s relief project, was fashioned to manifest the fortitude of the American people in the face of the Great Depression.

[116] *Contra* Winick, *supra* note 111, at 1598 ("[The Architectural Works Copyright Protection Act] extends protection to a broad class of architectural works.") (footnote omitted), 1613 ("Congress intended that the term 'building' have a broad meaning to compensate for the exclusion of 'other three-dimensional structures' from the scope of the [Architectural Works Copyright Protection Act]."). Winick proposes that two categories of architectural works should not be considered protectable: structures whose form is dictated by engineering requirements, and "works such as gardens and parks, that are not enclosed structures, but rather organizations of space." *Id.* at 1614.

infringement and not taken into account in computing actual damages.[105] In view of the defendant's failure to offer evidence that factors other than infringement led to individual sales, the *Richmond II* court awarded the defendant's *entire* net profits from the fourteen sales of infringing homes to the plaintiff.[106]

V. PREDICTING THE SCOPE OF PROTECTION AVAILABLE UNDER SECTION 102(a)(8)

The task of determining the scope of copyright protection for architectural works was intentionally left to the "Copyright Office or the courts."[107] The Copyright Office responded by issuing regulations for the registration of claims to copyright for architectural works in view of the legislative history of the Architectural Works Act.[108] However, no court has addressed specifically the scope of protection to be afforded architectural

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[105] *Id.*

[106] *Id.* at 1530, 33 U.S.P.Q.2d (BNA) at 1110. The *Richmond II* Court awarded damages of $218,708 which represented an average net profit margin of 14% on gross sales of $1,562,623.

[107] *See supra* text accompanying note 50.

[108] *See supra* text accompanying notes 66-67. During the first months after the effective date of the Architectural Works Act, the Copyright Office received 25 or fewer claims for registration. *Copyright Colloquium Reviews Changes In Practice and Caselaw*, 41 Pat., Trademark & Copyright J. (BNA) 528 (Apr. 18, 1991). After two years of statutory protection for the design of architectural works, the Copyright Office reported that it was receiving approximately 2000 applications for registration annually. 57 Fed. Reg. 45,307, *supra* note 52, at 45,309. The Copyright Office reviews claims to copyright primarily to ensure that the subject matter is within one of the enumerated statutory categories and that the proper deposit has been submitted. The Copyright Office should, at least until the courts dictate otherwise, take a permissive view towards registration of copyrights for architectural works because registration is a prerequisite to an infringement action, *see supra* note 83, and the proper forum in which to test the equitable limits of copyrightable subject matter is the courts. *See* Laurie A. Haynie, *So The Copyright Office Has Refused To Register Your Claim To Copyright - What Does It Mean And What Can You Do About It?*, 21 AIPLA Q.J. 70 (1993) (noting the Copyright Office issues approximately 96.4% of the applications submitted as part of a thorough review of the avenues of redress available to a rejected applicant.)

engineering plans and architectural drawings and told the defendant "to keep development of the site as identical to [plaintiff's project] as possible."[97]

These decisions recognize that standard features, such as rooms, doors, windows, and roof lines are not protected, but that the particular selection, arrangement, and composition of standard elements are subject to protection.[98] For example, in *CSM Investors* the court found substantial similarity between the designs because: (i) both buildings included unusual features such as sawtooth loading doors and a parapet wall;[99] (ii) an ordinary observer would conclude that the length of the buildings, the use of brick on the front and back of the buildings, and the floor elevations were very similar; and (iii) placement of the buildings on the site, the landscaping, the parking areas, and the vehicular traffic patterns were virtually identical.[100]

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[97] *CSM Investors*, 840 F. Supp. at 1307, 30 U.S.P.Q.2d (BNA) at 1041.

[98] *E.g.*, *Richmond II*, 862 F. Supp. at 1523-24, 33 U.S.P.Q.2d (BNA) at 1105 (stating that "[t]his conclusion is consistent with the purpose of the Architectural Works Protection Act of 1990"); *CSM Investors*, 840 F. Supp. at 1310, 30 U.S.P.Q.2d (BNA) at 1043 ("It is undisputed that copyright protection does not extend to the individual standard features. . . . The court concludes that the combination and arrangement of elements and the particular building design embodied in [plaintiff's] plans and drawings are sufficiently original to be afforded copyright protection."). The same cases agree that the threshold of the originality requirement, as it is for all categories of copyrightable subject matter, is not high. *Richmond II*, 862 F. Supp. at 1523, 32 U.S.P.Q.2d (BNA) at 1043 (citing *Feist*, 499 U.S. at 345, 18 U.S.P.Q.2d (BNA) at 1278); *CSM Investors*, 840 F. Supp. at 1309-10, 30 U.S.P.Q.2d (BNA) at 1043 ("Original, as the term is used in copyright, means only that the work was independently created by the author (as opposed to copied from other works) and that it possesses at least some minimal degree of creativity.")

[99] The plaintiff proposed parapet screening in response to the city officials' concern over the visibility of roof top mechanical units. *CSM Investors*, 840 F. Supp. at 1307, 30 U.S.P.Q.2d (BNA) at 1041.

[100] *Id.* at 1311, 30 U.S.P.Q.2d at 1044. The Court also noted that the placement of the cars and trees as well as the lettering and numbering on some of the defendant's drawings were identical to the plaintiff's drawings. The author points out that although similarities in the architect's style of illustrating standard elements on the drawings may properly be

similar' to the copyrighted work."[88] Judge Bassler first found that Mendham Lake had access to Value Group's sales brochure.[89] He then viewed the plaintiffs' and the defendant's architectural plans side-by-side and concluded that:

> There is no question that the plans are "substantially similar." Since the standard for originality and therefore copyrightability is so low, copying the floor plan alone infringes the copyright. Additionally, many of the details on each set of plans are exactly the same. For example, the placement, design, and size of many windows are identical. Based upon application of the *Midway* standard, the two sets of plans are "substantially similar."[90]

In granting the injunction, the judge stated:

> This Court determines that the Copyright Infringement Act of 1990 [*sic.* Architectural Works Copyright Protection Act of 1990] entitles [plaintiffs] to a temporary restraining order against [defendant], enjoining the construction of a house that would infringe plaintiffs' copyrighted *architectural work*, and their further use, modification, or copying of plaintiffs' copyrighted architectural designs.[91]

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[88] *Value Group*, 800 F. Supp. at 1232, 24 U.S.P.Q.2d (BNA) at 1535 (quoting Franklin Mint Corp. v. National Wildlife Art Exch., Inc., 575 F.2d 62, 64, 197 U.S.P.Q. (BNA) 721, 723 (1978)).

[89] A photocopy of Value Group's sales brochure for the "Estate House I" was attached to the sales contract between Mendham Lake and the prospective purchaser of the infringing house. *Id.* at 1232-33, 24 U.S.P.Q.2d (BNA) at 1535.

[90] *Id.* at 1232-33, 24 U.S.P.Q.2d (BNA) at 1535-36. *See supra* text accompanying note 85 for discussion of the *Midway* standard.

[91] *Value Group*, 800 F. Supp. at 1235, 24 U.S.P.Q.2d (BNA) at 1537 (emphasis added). Judge Bassler noted that prior to the Architectural Works Act at least one court, though refusing to directly enjoin construction of a building based on infringing plans, did order impoundment of the infringing plans. While impoundment was tantamount to enjoining construction, "[t]he 1990 Act would now permit the courts to enjoin construction of the building itself." *Id.* at 1235 n.8, 24

The architect who prepared the "Estate House I" plans offered to create unrelated plans for Mendham Lake, but Mendham Lake rejected the offer. Shortly thereafter, Mendham Lake informed Value Group that it had derived a new design by modifying and completely redrawing the "Estate House I" plans, and that it intended to proceed with construction based on the modified plans.[81] While the Mendham Lake house was still in the "preliminary construction stage,"[82] Value Group filed a complaint against Mendham Lake, asserting copyright infringement and requesting a temporary restraining order to halt further construction.[83]

After reviewing the standard for a preliminary injunction, Judge Bassler found that Value Group's "architectural plans and drawings, and the architectural work based on those plans and drawings," were expressly included among the definitions in 17 U.S.C. § 101 and therefore protected under 17 U.S.C. § 102(a)(5) and § 102(a)(8).[84] In determining the likelihood of success on the merits of Value Group's copyright infringement claim,

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[81] *Id.* Judge Bassler noted that the defendant's sales brochure invited prospective purchasers to copy competitor's designs. Mendham Lake's brochure encouraged its customers to "visit the numerous housing communities in the area and select a style of home which best meets their needs and then supply [Mendham Lake] with a [competitor's] brochure showing the model which is closest to meeting their needs." *Id.* at 1230 n.2, 1233 n.7, 24 U.S.P.Q.2d (BNA) at 1533 n.2, 1535 n.7.

[82] *Id.* at 1235, 24 U.S.P.Q.2d at 1537.

[83] *Id.* at 1230, 24 U.S.P.Q.2d (BNA) at 1533. As a prerequisite to jurisdiction, 17 U.S.C. § 411(a) (1994); *accord* M. G. B. Homes, Inc. v. Ameron Homes, Inc., 903 F.2d 1486, 1488 n.4, 15 U.S.P.Q.2d (BNA) 1282, 1284 n.2 (11th Cir. 1990), Value Group filed expedited copyright registration applications for its architectural plans and the drawings which appeared in the sales brochure under § 102(a)(5), and the "Estate House I" design under § 102(a)(8). Telephone Interview with McHattie, *supra* note 72.

[84] *Value Group*, 800 F. Supp. at 1231, 24 U.S.P.Q.2d (BNA) at 1534. Judge Bassler noted that "significant for this case, the category of architectural works was added with the passage of the 1990 Act. Therefore, architectural works are given 'full' protection under the law." *Id.* at 1231 n.4, 24 U.S.P.Q.2d (BNA) at 1534 n.4.

IV. REPORTED DECISIONS THAT INTERPRET THE SCOPE OF PROTECTION AVAILABLE UNDER SECTION 102(a)(8)

The Architectural Works Act was first addressed by the courts in *Value Group v. Mendham Lake Estates*.[72] Value Group[73] offered custom-built luxury homes in a geographical area in which the defendant was the plaintiffs' sole competitor.[74] Value Group developed architectural plans[75]

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[72] *See* Value Group v. Mendham Lake Estates, 800 F. Supp. 1228, 24 U.S.P.Q.2d (BNA) 1531 (D.N.J. 1992). *Value Group* very easily might not have been the first test of the Architectural Works Act. Before the temporary restraining order hearing began, Judge Bassler made it clear that he would not enjoin construction of an allegedly infringing house in the absence of law supporting such relief. It was only after plaintiffs' counsel made Judge Bassler aware of the recent changes in the copyright law granting "full" protection to architectural works that Judge Bassler agreed to grant the order. When defendant's counsel argued that plaintiffs' counsel would have to show the court case law allowing such injunctive relief, Judge Bassler stated "this is the case, sir. I'm going to give [plaintiffs] a temporary restraining order." Telephone Interview with Christopher J. McHattie, counsel for plaintiffs. (Apr. 1993) *But compare Use Of Brochure Photocopy To Make Architectural Design Warrants TRO*, 44 Pat. Trademark & Copyright J. (BNA) 663 (Oct. 22, 1992) ("Although the court cited the recently enacted architectural work amendments to the Copyright Act, it noted [citing unpublished n.8] that courts found authority under the prior law to issue such orders as well.").

[73] The plaintiffs, a real estate developer named The Value Group, Inc., and an architectural firm, Stern-Ring Associates, are collectively referred to as the plaintiffs, or Value Group. The defendant, Mendham Lake Estates, L.P. is referred to as the defendant, or Mendham Lake. *Value Group*, 800 F.Supp. at 1229, 24 U.S.P.Q.2d (BNA) at 1532.

[74] Value Group and Mendham Lake build custom homes in the $450,000 to $600,000 price range located primarily in Morris County, New Jersey. *Id.* at 1230, 24 U.S.P.Q.2d (BNA) at 1533.

[75] At the time of the temporary restraining order hearing, plaintiffs' counsel believed that the infringing house had been developed by the defendant's architect from plaintiffs' architectural plans, filed with the local planning board, and plaintiffs floor plans pictured in their copyrighted sales brochure. After initial discovery, it became apparent that all the architect had before him at the time he developed the plans for the infringing house was the sales brochure. The sales brochure included a three-dimensional rendering of the plaintiffs' design which showed the elevation characteristics and overall form of the house. In the opinion of

the language "could be interpreted as covering interstate highway bridges, cloverleafs, canals, dams and pedestrian walkways."[61] The broader definition, it was argued, could lead to increased costs in the nation's infrastructure.[62] The architectural works provisions of H.R. 5498 were incorporated as Title VII of H.R. 5316, the Judicial Improvements Act of 1990,[63] passed by both branches of Congress on October 27, 1990, and signed by President Bush on December 1, 1990.[64]

The Copyright Office prepared draft guidelines to assist Examiners and the public with the new registration procedures, issued proposed regulations, and invited comments pending the release of final regulations.[65] After receiving comments and revising the proposed regulations, the Copyright Office published final regulations governing the registration of claims to copyright in architectural works.[66] Agreeing with the Subcommittee, the Copyright Office rejected recommendations for the broader definition of protectable subject matter originally proposed by H.R. 3990.[67] The Copyright Office also rejected a suggestion that would have expanded the definition of protectable subject matter to cover creative

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[61] H.R. REP. NO. 735, *supra* note 4, at 19-20, *reprinted in* 1990 U.S.C.C.A.N. at 6950.

[62] 57 Fed. Reg. 45,307, *supra* note 52, at 45,308.

[63] Pub. L. No. 101-650, *supra* note 2.

[64] *President Signs Bill On Software Rental, Architectural Works And Artist's Rights*, 41 Pat. Trademark & Copyright J. (BNA) 123 (Dec. 6, 1990).

[65] *Registration Of Claims To Copyright; Architectural Works*, 56 Fed. Reg. 48,137 (1991) (to be codified at 37 C.F.R. pt. 202) (proposed Sept. 24, 1991). The proposed regulations addressed the following issues: (i) subject matter coverage; (ii) the form to be used for registration; (iii) whether publication of architectural plans also publishes the architectural work, although publication of the work does not publish the plans; (iv) the relationship between architectural works and technical drawings protected under § 102(a)(5); and (v) the type of deposit required for architectural works. *Id.* at 48,137-38.

[66] 57 Fed. Reg. 45,307, *supra* note 52, at 37 C.F.R. Part 202 (Oct. 1, 1992).

[67] *Id.* at 45308-09.

102(a), Congress intended that architectural works not be evaluated under the separability test applicable to pictorial, graphic, and sculptural works.[53]

Representative Kastenmeier and the Committee warned, however, that in evaluating copyrightability the Copyright Office and the courts should not ignore functionality.[54] A two-step functionality inquiry was envisioned. First, an architectural work would be examined to determine whether there are original artistic elements present in the overall shape to warrant protection. If so, a second inquiry would be made, namely, whether the artistic elements present are required by functional constraints on the design of the work. If the protectable artistic elements are not "absolutely functionally required, the work is protectable."[55]

H.R. 3990 was well received and endorsed by government witnesses and architects alike at a March 14, 1990 hearing on the bill before the House Subcommittee on Courts, Intellectual Property and the Administration of

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> drawings will have two separate copyrights, one in the architectural work (section 102(a)(8)), the other in the plans or drawings (section 102(a)(5)). Either or both of these copyrights may be infringed and eligible separately for damages.

H.R. REP. NO. 735, *supra* note 4, at 19, *reprinted in* 1990 U.S.C.C.A.N. at 6950. *See also Registration of Claims to Copyright; Architectural Works*, 57 Fed. Reg. 45,307 (to be codified at 37 C.F.R. pts 202.11, 202.19-20):

> Separate registration for plans: Where dual copyright claims exist in technical drawings and the architectural work depicted in the drawings, any claims with respect to the technical drawings and the architectural work must be registered separately.

[53] H.R. REP. NO. 735, *supra* note 4, at 20, *reprinted in* 1990 U.S.C.C.A.N. at 6951. The creation of a new class of subject matter under § 102(a) avoided subjecting architectural works to the "useful articles" separability analysis required under § 113(b). *See supra* text accompanying note 34.

[54] *Id.*; *see also Bills Provide Protection*, *supra* note 13, at 287 (1990).

[55] H.R. REP. NO. 735, *supra* note 4, at 20-21, *reprinted in* 1990 U.S.C.C.A.N. at 6951-52; 136 CONG. REC. E259, *supra* note 41; §§ 1733, 1734.

recommendations for amending the Copyright Act.[44] In June 1989, the Copyright Office presented a 226-page report in which it concluded that explicit protection for architectural works was required under the Berne Convention and that the copyright law should be amended to provide explicitly for such protection.[45]

On February 7, 1990, in response to the Copyright Office report, Representative Kastenmeier introduced H.R. 3990[46] to amend the Copyright Act to include architectural works as a separate subject matter category. Specific protection for architectural works was deemed necessary "to place U.S. law unequivocally in compliance with our Berne obligations."[47]

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[44] H.R. REP. NO. 735, *supra* note 4, at 11-12, *reprinted in* 1990 U.S.C.C.A.N. at 6942-43; 136 CONG. REC. E259, *supra* note 41, at 1733.

[45] *Copyright in Works of Architecture: A Report of the Register of Copyrights*, Pub. L. No. 71-140. In the preface to his report, Register of Copyrights Ralph Oman states "I know of no other issue to arise in the Copyright Office that has engendered such deep and bitterly fought professional disagreements." *Id.* The report concluded that the 1976 Act did not provide the required protection for works of architecture, and suggested four options which would place the United States in compliance with its Berne Convention obligations: (i) create a new subject matter category for architectural works with appropriate limitations; (ii) extend the scope of protection in architectural plans to prohibit unauthorized construction based on infringing plans; (iii) amend the definition of "useful article" to exclude architectural works; and (iv) allow the courts to develop new theories based on adherence to the Berne Convention. *Id.*

[46] 136 CONG. REC. E259, *supra* note 41, at 1733. On the same day, Representative Kastenmeier introduced an alternative bill, H.R. 3991, entitled the "Unique Architectural Structures Copyright Act of 1990." H.R. 3991 proposed an amendment to the definition of "useful article" in § 101 to exclude "one-of-a-kind buildings and other three-dimensional structures that possess a unique artistic character." Such works would then be eligible for protection under the § 101 definition of pictorial, graphic, and sculptural works. See *Bills Provide Protection*, *supra* note 13, at 287. In later proceedings, H.R. 3991 was soundly rejected as being too subjective to be applied consistently by the Copyright Office and the courts.

[47] 136 CONG. REC. E259, *supra* note 41, at 1733; *Bills Provide Protection*, *supra* note 13, at 286; *see also* H.R. REP. NO. 735, *supra* note 4, at 20, *reprinted in* 1990 U.S.C.C.A.N. at 6951 ("The sole purpose of legislating at this time is to place the United States unequivocally in compliance with its Berne obligations.").

to the plaintiffs' and provided the architect with an unauthorized set of the plaintiffs' architectural plans. The architect simply traced the plans to produce the plans that were used to build the house.

Finding infringement, the *Demetriades* court attempted to fashion a meaningful injunction, but was troubled by the measure of injunctive relief available to the plaintiffs.[37] The court declined to find that *construction* of a house based on unauthorized copies of architectural plans constituted infringement and consequently refused to enjoin construction of the house.[38] Instead, the court enjoined the defendants from relying further on any infringing copies of the plaintiffs' plans and impounded the infringing plans already in the possession of the defendants.[39] Of course, the true significance of the decision was effectively to shut-down construction of the house until new plans could be drawn by the defendants and approved by the local governmental building authority.[40] With the Architectural Works Act in place, the copyright law now affords courts the opportunity to *permanently* enjoin the construction of infringing *buildings*.

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[37] *Id.* at 662, 6 U.S.P.Q.2d (BNA) at 1739 ("It is in determining the extent of injunctive relief to which plaintiffs are entitled under federal copyright law whereby this court must come to grips with an aspect of copyright law that presents formidable intellectual hurdles.").

[38] *Id.* at 664, 6 U.S.P.Q.2d (BNA) at 1740. *But see* Herman Frankel Org., Inc. v. Wolfe, 184 U.S.P.Q. (BNA) 819 (E.D. Mich. 1974). In a case decided before the 1976 Act, the court issued an injunction preliminarily enjoining the defendants "from *further* construction of [a house based on infringing architectural plans] *from or in accordance with* such infringing drawings or copies," and "from any and all use of any copies made by the [d]efendants of [p]laintiff's copyrighted architectural floor plans." *Id.* at 821 (emphasis added). At the time the injunction was issued, the defendants' house was in the rough stage of construction. After the defendants submitted an independently prepared set of architectural drawings to the court, the injunction against construction was dissolved. *Id.*

[39] *Demetriades*, 680 F. Supp. at 666, 6 U.S.P.Q.2d (BNA) at 1742.

[40] *Id.* at 666 n.13, 6 U.S.P.Q. (BNA) at 1742 n.13.

> similar to the one depicted in the copyrighted plans, without requiring the architect to show that the design is novel as opposed to merely original, would give architects unwarranted monopoly powers with the result that the costs of houses and other buildings would rise unnecessarily.[29]

Although the 1976 Act completely revised the 1909 Act, it did nothing to erase the distinction between architectural plans and the structures depicted in plans and drawings.[30] Thus, under the 1976 Act, courts were less certain as to the proper scope of protection to be afforded architectural plans.[31] Under the 1976 Act, copyright protection afforded to architectural plans is limited because "the nature and extent of such protection are subject to certain qualifications peculiar to this form of work."[32] One of the limitations is that:

> [Title 17] does not afford to the owner of copyright in a work that portrays a useful article as such, any greater or lesser rights with respect to the making, distribution, or display of the useful article so portrayed than those afforded to such works under the law . . . in effect on December 31, 1977.[33]

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[29] *Robert R. Jones Assoc.*, 858 F.2d at 279, 8 U.S.P.Q.2d (BNA) at 1228.

[30] *See, e.g.*, Donald Frederick Evans & Assoc. v. Continental Homes, Inc., 785 F.2d 897, 901 n.7, 229 U.S.P.Q. (BNA) 321, 323 n.7 (11th Cir. 1986) ("A builder who constructs a home substantially similar to a dwelling already constructed is not liable for copyright infringement merely based on the substantial similarity if he or she did not engage in unauthorized copying or use of the copyrighted architectural drawings."); Acorn Structures, Inc. v. Swantz, 657 F. Supp. 70, 75, 2 U.S.P.Q.2d (BNA) 1632, 1635 (W.D. Va. 1987) ("Under copyright law, it has been recognized not to be an infringement to build or construct the object or structure depicted in a plan or drawing copyrighted as a technical or scientific work under 17 U.S.C. § 5(i).").

[31] *See* Demetriades v. Kauffman, 680 F. Supp. 658, 662-63, 6 U.S.P.Q.2d (BNA) 1737, 1740 (S.D.N.Y. 1988) ("[G]iven the fact that the principle utility of architectural plans is in their use, what is the breadth of protection afforded such plans by a Federal copyright?").

[32] 1 NIMMER ON COPYRIGHT, *supra* note 5, § 2.08[D][2][a] at 2-117.

[33] 17 U.S.C. § 113(b) (1994).

and structures depicted in plans, which were not,[20] courts continued to struggle with the "idea/expression" dichotomy foretold in *Baker*.[21]

In *Scholz Homes, Inc. v. Maddox*,[22] the Sixth Circuit advised in *dictum* that *Baker*, if read literally, "would seem to permit the making of [duplicate] plans as well as the construction of [identical] buildings."[23] Plaintiff Scholz publicized its design of a split-level home in a widely-distributed booklet and displayed a model of the home at builders' conventions. Scholz obtained copyright registrations for both the booklet and the architectural plans for the home. In its suit, Scholz alleged that the defendant homeowners copied a drawing of its design from the booklet to develop infringing architectural

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[20] Imperial Homes Corp. v. LaMont, 458 F.2d 895, 899, 173 U.S.P.Q. (BNA) 519, 522-23 (5th Cir. 1972) ("[N]o copyrighted architectural plans under § 5(i) may clothe their author with the exclusive right to reproduce the dwelling pictured. . . . We do not hold that the LaMonts were in any way restricted by the existence of Imperial's copyright from reproducing a substantially identical residential dwelling."); Herman Frankel Org. v. Tegman, 367 F. Supp. 1051, 1053, 181 U.S.P.Q. (BNA) 317, 318 (E.D. Mich. 1973) ("A person cannot, by copyrighting plans, prevent the building of a house similar to that taught by the copyrighted plans. . . . A person should, however, be able to prevent another from copying copyrighted house plans and using them to build the house."); DeSilva Constr. Corp. v. Herrald, 213 F. Supp. 184, 195, 137 U.S.P.Q. (BNA) 96, 105 (M.D. Fla. 1962) ("The protection extended by Congress to the proprietor of a copyright in architectural plans does not encompass the protection of the buildings or the structures themselves, but it is limited only to the plans . . . . [T]he architect does not have the exclusive right to build structures embodied in his technical writings.").

[21] *See Imperial Homes*, 458 F.2d at 898, 173 U.S.P.Q.(BNA) at 522 ("The 1879 doctrine of *Baker v. Selden* has created considerable problems in determining the protection to be afforded many works in the § 5(i) class."); *Herman Frankel Org.*, 367 F. Supp. at 1053, 181 U.S.P.Q. (BNA) at 318 ("At the outset we are faced with the principles established in *Baker v. Selden*.").

[22] 379 F.2d 84, 154 U.S.P.Q. (BNA) 197 (6th Cir. 1967).

[23] *Id.* at 86, 154 U.S.P.Q. (BNA) at 198. *But see Imperial Homes*, 458 F.2d at 899, 173 U.S.P.Q. (BNA) at 522 ("[N]othing in *Baker v. Selden* prevents such a copyright from vesting the law's grant of an exclusive right to make copies of the copyrighted plans so as to instruct a would-be builder on how to proceed to construct the dwelling pictured."); Demetriades v. Kauffman, 680 F. Supp. 658, 665, 6 U.S.P.Q.2d (BNA) 1737, 1742-43 (S.D.N.Y. 1988) (criticizing the court's conclusion in *Scholz Homes*).

Berne Implementation Act added a reference to "architectural plans" to the definition of "pictorial, graphic and sculptural works."[12] It was not until passage of the Architectural Works Act, however, that architectural works, other than non-functional monuments, were explicitly protected under United States copyright law.[13]

The first significant case to interpret the scope of protection afforded to works under the Copyright Act was the Supreme Court's landmark decision in *Baker v. Selden*.[14] In *Baker*, the Court voiced its concern that if the scope of protection in copyright extended to the idea expressed in the author's writing, copyright and patent protection would overlap.[15] The *Baker* Court resolved the issue by announcing what is now known as the "idea/expression" dichotomy, namely, that copyright protection extends

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[12] *See* Berne Convention Implementation Act, *supra* note 5, 102 Stat. at 2854.

[13] H.R. REP. NO. 735, *supra* note 4, at 11, *reprinted in* 1990 U.S.C.C.A.N. at 6942; *Bills Would Provide Copyright Protection For Architectural Works*, 39 Pat. Trademark & Copyright J. (BNA) 286 (Feb. 15, 1990) [hereinafter *Bills Provide Protection*].

[14] 101 U.S. 99 (1879). Selden held a copyright in a book which included blank forms for use with the accounting system described in the book. Baker published a book describing a similar system using similar forms. The Court found that Baker's book was not substantially similar to Selden's book, even though the results of the two accounting systems were the same, because different *means* were used to obtain the same result. *Id.* at 101.

[15] *Id.* at 102 ("To give to the author of the book an exclusive property in the art described therein, when no examination of its novelty has ever been officially made, would be a surprise and a fraud upon the public. That is the province of letters-patent, not of copyright."); *cf.* Mazer v. Stein, 347 U.S. 201, 217, 100 U.S.P.Q. (BNA) 325, 332 (1954) ("As we have held the statuettes here involved copyrightable, [sic] we need not decide the question of their patentability. . . . Neither the Copyright Statute nor any other says that because a thing is patentable it may not be copyrighted."). The Court in *Mazer* harmonized its decision with *Baker* by distinguishing between novelty and invention, which is protected by patent, and originality, which is protected by copyright. *Id.* at 218, 100 U.S.P.Q. (BNA) at 333.

I. INTRODUCTION

Prior to December 1, 1990, the United States copyright law did not provide explicit protection for the design of a building other than a non-functional monument.[1] Effective that date, legislation[2] was enacted which includes provisions for the copyrightability[3] of "architectural works." The Architectural Works Copyright Protection Act ("Architectural Works Act")[4] amended the Copyright Act of 1976 to satisfy the United States' obligations as a signatory to the Berne Convention.[5] The new law created a separate class of protected subject matter[6] defined as:

> the design of a building as embodied in any tangible medium of expression, including a building, architectural

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[1] Non-functional monuments are subject to copyright protection as sculptural works under the Copyright Act. 17 U.S.C. § 102(a)(5) (1994).

[2] Judicial Improvements Act of 1990, Pub. L. No. 101-650, 104 Stat. 5089; *see* S. REP. NO. 416, 101st Cong., 2d Sess. 35-36 (1990), *reprinted in* 1990 U.S.C.C.A.N. 6802, 6958 (Signing Statement).

[3] Original works that fall within at least one of the categories of subject matter listed in § 102 of the Copyright Act are protected from the moment the work is fixed in a tangible medium of expression. A copyright claimant may register the copyright with the Copyright Office to obtain the additional benefits, including the right to bring an action for infringement in a United States District Court, that are afforded a registered copyright.

[4] Architectural Works Copyright Protection Act, Pub. L. No. 101-650, §§ 701-706, 104 Stat. 5133 (1990) (codified at 17 U.S.C. §§ 101, 102(a), 106, 120, 301(b)) [hereinafter Architectural Works Act]; H.R. REP. NO. 735, 101st Cong., 2d Sess. 3 (1990), *reprinted in* 1990 U.S.C.C.A.N. 6935 [hereinafter H.R. REP. NO. 735].

[5] As a result of the Berne Convention Implementation Act of 1988, Pub. L. No. 100-568, 102 Stat. 2853, the United States became a signatory to the Berne Convention effective March 1, 1989. Berne Convention signatories are required to provide copyright protection for "works of . . . architecture." Berne Convention, Sept. 9, 1886, art. 2(1), 828 U.N.T.S. 221, 222 (Paris revision, July 24, 1971), *reprinted in* 5 DAVID NIMMER & MELVILLE B. NIMMER, NIMMER ON COPYRIGHT app. 27-2 (1992) [hereinafter NIMMER ON COPYRIGHT].

[6] *See* 17 U.S.C. § 102(a)(8) (1994).

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