Proprietary Protection of Computer User Interfaces

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NOTES

PROPRIETARY PROTECTION OF COMPUTER USER INTERFACES

The market for computer programs,1 spawned in part by the widespread popularity and availability of personal computers, has generated an intensely competitive software industry.2 The relative ease of copying software3 heightens the need for software vendors

1 See Act of Dec. 12, 1980, Pub. L. No. 96-517, § 10(a), 94 Stat. 3028 (1980) (codified as amended at 17 U.S.C. § 101 (1988)) [hereinafter Copyright Act] (amending Copyright Act of 1976, Pub. L. No. 94-553, tit. 1, § 101, 90 Stat. 2541 (1980)). A computer program is defined statutorily as a "set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." Id. Although the terms "software" and "computer program" have been used to mean different things, see D. BENDER, COMPUTER LAW § 2.06 (1990), this Note will use the terms interchangeably. See Fetterman, The Scope of Protection for Computer Programs: Exploring the Idea/Expression Dichotomy, 43 WASH. & LEE L. REV. 1373, 1373 n.1 (1986) (citations of cases using "software" and "computer programs" interchangeably). Computer programs can be divided into two general categories: applications programs and operating system programs. See Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1243 (3d Cir. 1983), cert. dismissed, 464 U.S. 1033 (1984). An application program usually performs a task such as producing spread sheets, while an operating system program manages the internal functions of the computer in order to run the applications program. Id.; see also D. BENDER, supra, § 2.06[2],[3] (discussion of systems programs and applications programs); L. KUTTEN, COMPUTER SOFTWARE: PROTECTION/LIABILITY/LAW/FORMS §§ 1.01-1.07 (1987) (discussion of software and programming techniques). Application programs and operating system programs are entitled to the same protection under the copyright law. See Franklin, 714 F.2d at 1251.

2 See Kahn, Patent Protection for Computer Software, J. proprietary Rts., June 1989, at 7. It is estimated that the total market for computers and information processing products will reach $200 billion in 1990, approximately half of which is attributed to computer software. See id. An estimated 23% of the households in the United States owned a personal computer in 1990 up from just 13% in 1985. N.Y. Times, March 29, 1990, at C1, col. 1.

3 See Apple Computer, Inc. v. Formula Int'l, Inc., 562 F. Supp. 775, 783 (C.D. Cal. 1983), aff'd, 725 F.2d 521 (9th Cir. 1984). The "process of duplicating or copying a program, once it is put into usable form in a ROM or diskette, is almost absurdly simple . . . [since] diskettes can be copied for a minimal cost by anyone with rudimentary technical skill and a few pieces of equipment, and ROMs require only slightly greater sophistication." Id.; see also Forsten, It Walks and Talks Like My Duck, So How Come It's Not Infringement?: The
to protect the proprietary interests in their programs by legal, as


For an extensive discussion on the requisites of acquiring and enforcing a patent, see D. Chisum, PATENTS (1989). While the question of whether computer programs presented proper statutory subject matter for patents was a controversial topic throughout the 1970's, it is now well established that computer programs are not per se nonstatutory subject matter. See Diamond v. Diehr, 450 U.S. 175, 187 (1981) ("a [patent] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer"). See generally Bender, The Case for Software Patents, COMPUTER LAW., May 1989, at 2 (analysis of patentability of computer programs); Kahn, supra note 2 (same). The United States Patent and Trademark Office ("PTO") recently released a report reflecting the judicially established guidelines for determining whether computer programs present statutory subject matter. See Patentable Subject Matter: Mathematical Algorithms and Computer Programs, 1106 OFF. GAZ. PAT. OFFICE 5 (Sept. 5, 1989). Nevertheless, due to the high cost and long delay of prosecuting patent applications, and the likelihood that most computer program inventions do not rise to the requisite level of patentability, patents may not be the best alternative for most programmers. See Rodau, supra, at 551.

State trade secret laws may also protect computer programs and have been used for this purpose since at least 1965. See L. Kutten, supra note 1, at 4-2 n.1. The most widely accepted definition of a trade secret is promulgated in the Restatement of Torts:

A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers.

RESTATEMENT OF TORTS § 757 comment b (1939). See generally R. Milgrim, MILGRIM ON TRADE SECRETS § 2.09[5] (1990) (discussion of computer programs as trade secrets and citations of cases). But see Rodau, supra, at 534 (disadvantage of applying trade secret protection to software systems is difficulty of enforcement if programs widely distributed to public).

Copyrights on computer programs first were registered with the United States Copyright Office ("Copyright Office") as early as 1964 under its "rule of doubt." See Oman, Software as Seen by the U.S. Copyright Office, 28 IDEA 29, 29 (1987). Under this rule, three conditions must be met to register a computer program: "first, the program had to contain
well as extralegal, means. Although the primary legal issues in this

significant amounts of original authorship; second, it had to be published with the required notice of copyright; and, third, if the work was published only in machine readable form, the author had to deposit a human readable reproduction such as a printout.” Id. (citation omitted). While only three programs were registered in 1964, it is estimated that the number has increased to over 10,000 per year. See id. at 29-30. Recently, Congress amended the copyright laws by enacting the “Semiconductor Chip Protection Act of 1984” (“SCPA”), which provides sui generis protection from unauthorized reproduction of original semiconductor mask works. See Semiconductor Chip Protection Act of 1984, Pub. L. No. 98-620, tit. 3, § 302, 98 Stat. 3347 (1984) (codified as amended at 17 U.S.C. §§ 901-914 (1988)). A mask work is essentially a series of related images etched in or added to a semiconductor chip product so that each image resembles a part of the surface of the semiconductor chip product. See 17 U.S.C. § 901(a)(2) (1988). While the copyright laws provide protection for infringement of a program which may be embodied in “Read Only Memory”, see infra note 25, the SCPA will protect the architecture of the ROM itself as embodied by its mask works. See generally R. STERN, SEMICONDUCTOR CHIP PROTECTION (1986). Thus, a pirate who illicitly duplicates the mask works of a protected ROM embodying a copyrighted computer program may be liable under the SCPA as well as relevant provisions of the copyright statutes.

A program owner also may license the program and prevent the licensee from modifying or using the program outside the scope of the license. See Raysman, Liability for Unauthorized Changes in Software, N.Y.L.J. Nov. 15, 1989, at 3, col. 1 (discussing S.O.S., Inc. v. Payday, Inc., Nos. 88-5817 and 88-5878 (9th Cir. Sept. 13, 1989), holding that licensee probably committed copyright infringement when exceeded scope of license by making unauthorized modifications to software licensed by plaintiff-licensor); see also Apple Computer, Inc. v. Microsoft Corp., 717 F. Supp. 1428, 1432-35 (N.D. Cal. 1989) (certain aspects of defendant-licensee's visual displays not copyright infringement because of inclusion under previous license agreement with plaintiff-licensor).

Shrink-wrap license agreements, which are miniaturized versions of a vendor's standardized licensing agreement, are sometimes included in the package of commercial mass-marketed software, and purport to bind the purchaser to its terms. See Note, Offers Users Can't Refuse: Shrink-Wrap License Agreements as Enforceable Adhesion Contracts, 10 CARDOZO L. REV. 2105, 2108 (1989). The purchaser usually acquiesces to the agreement merely by opening the software package or by using it. Id. Thus, these licenses may prevent software rental and the piracy it breeds by contractually prohibiting the transfer of software. Id. at 2109.

* See generally L. HABAND & R. SHELTON, supra note 3, at ch. 4 (discussion of technical approaches to software protection). Many software vendors embed anti-copying devices in the program's code which prevent the user from making subsequent executable copies of that program. See Cangialosi, supra note 3, at 296-97. This practice may be questionable, however, in light of express statutory authority stating that there is no infringement where the owner of a copy of a program makes another copy for archival purposes. See 17 U.S.C. § 117 (5th Cir. 1988). Moreover, the Fifth Circuit has held that a program enabling users to “unlock” copy-protected software and make executable copies does not contributorily infringe the copyright held on the copy-protected software, since permission to make archive copies is granted by section 117(2). See Vault Corp. v. Quaid Software, Ltd., 847 F.2d 255, 267 (1988). But see Atari, Inc. v. JS & A Group, Inc., 597 F. Supp. 5, 9-10 (N.D. Ill. 1983) (§ 117 interpreted to mean that certain media embodying programs are especially susceptible to mechanical or electrical damage, and archive copies are permitted only for those media); Micro-Spare, Inc. v. Amtype Corp., 592 F. Supp. 33, 35-36 (D. Mass. 1984) (archive exception not applicable to copying of programs which appear only in form of printed instructions
area usually have focused on the scope of protection given to the program's code, more recently, questions regarding the protection of the computer user interface as an entity distinguishable from the program have garnered attention.

The user interface generated by a program includes all the devices by which the user can interact with the computer in order to accomplish the tasks the computer is programmed to perform. It consists generally of the elements of the screen display, which include the particular arrangement of icons, menus, submenus, windows, borders, and colors or levels of gray. Conceptually, the user interface also may include the interaction of the input/output hardware devices attached to the computer, such as a keyboard, mouse, light pen, touch-screen, and the like. Although a gen-

An interesting recent approach to the problem of unauthorized copying has been for vendors to offer amnesty programs in an effort to recoup revenue lost due to such piracy. See Xtree Says Amnesty Program Is an 'Overwhelming Success', Infoworld, Nov. 13, 1989, at 87, col. 4 (program allowed "unauthorized users to register their copies of the software and become eligible for support and future upgrades").


See Forsten, supra note 3, at 643-45.

See infra notes 22-27 and accompanying text; see also Manufacturers Tech., Inc. v. CAMS, Inc., 706 F. Supp. 984, 993 (D. Conn. 1989) (user interface designed to communicate with user in way to facilitate understanding and use of program itself); Forsten, supra note 3, at 643 (user interface consists of program which displays information on screen and requires responses and input from user).

See L. Schwarz, COMPUTER LAW FORMS HANDBOOK 9-336 (1989). An icon is a graphical representation denoting to the user a function which can be performed by its selection on the screen. Id.

See F. Weik, STANDARD DICTIONARY OF COMPUTERS AND INFORMATION PROCESSING 219 (2d ed. 1977) (menu display is list of options from which operator selects by use of input device); see also Forsten, supra note 3, at 643 (menus present user with choices on screen from which options or commands are chosen).

See L. Schwarz, supra note 9; see also Lotus Dev. Corp. v. Paperback Software Int'l, 740 F. Supp. 37, 63 (D. Mass. 1990) (plaintiff's claim that user interface of spreadsheet program includes menus, long prompts, screens on which they appear, function key assignments, and macro commands and language).

See W. Rosch, THE WINN ROSCH HARDWARE BIBLE 257 (1989). A mouse is a keyboard alternative which basically comprises a pointing device that allows the user to choose a menu selection by physically moving or dragging the device, thereby causing a corresponding on-screen movement of the cursor. Id.

See id. at 264. A light pen is connected to the computer and contains a photodetector...
eral approach to the problems of proprietary protection of the user interface would address such devices, the issues of legal protection of the user interface heretofore have been confined primarily to those of the screen displays.\textsuperscript{16}

Proprietary protection of the user interface of a program may be crucial to a software vendor's efforts to sustain a program's success in the market.\textsuperscript{17} A vendor's investment in developing a marketable program\textsuperscript{18} by virtue of its "user-friendly" interface is substantial. Allowing a competitor to "knock-off" the original program with the identical or a similar user-friendly interface at a lower price may cause the original vendor substantial damage.

Accordingly, software vendors have turned to the remedies of copyright law as a means of protecting both their programs and the user interfaces those programs generate.\textsuperscript{19} In addition to copyright law, at least one vendor has recently used design patents as a means of protecting user interfaces. Design patents have been issued covering certain aspects of screens generated by a computer

which senses changes in brightness.\textit{Id.} By holding the light pen near a desired menu selection on the screen, the detected emission of light from the screen signals the computer which particular item has been selected by the user.\textit{Id.}

\textsuperscript{14} See id. at 265. Touch screens allow the user to simply point to, or touch, a desired menu item on the screen.\textit{Id.} One technology capacively detects the presence of the finger.\textit{Id.} A second, more sophisticated technology, emits an array of invisible light across the front of the screen.\textit{Id.} When the user places his finger near the desired selection, the field is broken, and the computer detects which selection was pointed to.\textit{Id.}

\textsuperscript{15} See, e.g., Manufacturers Tech., Inc. v. CAMS, Inc., 706 F. Supp. 984, 995 (D. Conn. 1989) (user interface includes internal navigation: use of space bar, backspace key, and return key to move cursor through and select from list on screen).

\textsuperscript{16} See infra notes 116-20 and accompanying text.

\textsuperscript{17} See F. COOPER, LAW AND THE SOFTWARE MARKETER 2 (1988).

\textsuperscript{18} See, e.g., Manufacturers Tech., 706 F. Supp. at 988 (approximately 3000 man-hours expended in developing original program).

\textsuperscript{19} See F. COOPER, supra note 17, at 37-43. Copyright infringement cases concerning user interfaces generally have been referred to as the "look-and-feel" cases. See Forsten, supra note 3, at 643. The term "look-and-feel," however, is misleading and thus avoided in this Note. While the term has been used generally to refer to screen displays of the user interface generated by a program, it also has been used to refer to the structure and arrangement of the program's actual code. See, e.g., Comment, When Technology and the Law Collide—Look & Feel Copyright Evolves, 16 W. St. U.L. Rev. 183 passim (referring to and defining "look-and-feel" as element of computer program). But see Lotus Dev. Corp. v. Paperback Software Int'l, 740 F. Supp. 37, 63 (D. Mass. 1990) ("look and feel" is conclusion of infringement analysis, rather than reason for finding infringement; use of term as infringement test should be avoided); Note, The Test for Proving Copyright Infringement of Computer Software: "Structure, Sequence and Organization" and "Look and Feel" Cases, 14 WM. MITCHELL L. REV. 105 passim (separation of look-and-feel issue).
program. The issuance of these design patents raises questions regarding the scope of protection design patents, compared to copyrights, afford user interfaces.

This Note will analyze the application of copyrights and design patents as a means of protecting the user interfaces and will compare the scope of protection afforded by each. Part One will discuss the previous applications of copyrights to protect computer programs and review the early cases addressing user interface issues. The current issue of the severability of the user interface from its underlying program in infringement suits and the scope of protection user interfaces have received recently also will be examined. Part Two will explain the application of design patents to user interfaces by examining design patent law principles and recently issued user interface design patents. Part Three will discuss the doctrine of election. Finally, in Part Four, policy considerations relevant to the issue of user interface protection will be reviewed.

I. COPYRIGHT PROTECTION OF THE USER INTERFACE

A. Previous Applications of Copyright Law to Protect Computer Programs

The use of copyrights to protect computer programs generally has been proven to be quite successful. Courts have construed copyrights to protect against the literal copying of the source code as well as the object code of a program. Further, in the leading

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See infra notes 116-20 and accompanying text.

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See Whelan Assocs., Inc. v. Jaslow Dental Laboratory, Inc., 797 F.2d 1222, 1230-31 (3d Cir. 1986), cert. denied, 479 U.S. 1031 (1987); Midway Mfg. Co. v. Strohon, 564 F. Supp. 741, 750 (N.D. Ill. 1983). Source code is written by a programmer in a language such as BASIC or FORTRAN, and then translated into machine readable object code, which is a concatenation of ones and zeros. See id. In Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983), cert. dismissed, 464 U.S. 1033 (1984), object code and source code were found to be protectable by copyright. Id. at 1253. The Franklin court entertained the suggestion that object code is not protected by copyright since it is in machine readable, and not human readable, form. Id. at 1248. The court considered the authority of White-Smith Music Publishing Co. v. Apollo Co., 209 U.S. 1 (1908), which held that a piano roll was not a copy of the musical composition because it was in a form very few could perceive. Franklin, 714 F.2d at 1248. In finding that the Copyright Act obliterates such distinctions, the court cited 17 U.S.C. section 102(a) ("copyright extends to works in any tangible means of expression 'from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device' " (emphasis in original)), and the definition of a computer program under 17 U.S.C. section 101 ("statements or instructions to be used directly or indirectly in a computer." (emphasis by court)). Franklin,
The United States Court of Appeals for the Third Circuit extended copyright protection beyond the program's code to cover the structure and organization of the program when the code has not been copied literally. Courts have found infringement of computer programs regardless of whether the program had been copied from Read Only Memory ("ROM"), floppy disk, or by hand. More recently, courts have held that programs in the form of microcode are proper subject matter for copyright. Additionally,
in the first user interface cases, audiovisual screen displays of video games were found to be protectable through copyrights.

B. Early User Interface Cases—Video Game Screen Displays

Issues of user interface protection first appeared in the context of video games. Usually, video game screen displays were registered in the United States Copyright Office (“Copyright Office”) as audiovisual works, although some plaintiffs separately registered the underlying program code. The principal challenge made
to the copyrightability of the screen displays was that they were neither fixed in a tangible medium of expression nor original works of authorship, as mandated by statute. Courts considered this reasoning, finding that the displays exhibited the requisite originality apart from the underlying program, and that fixation was satisfied by permanent storage in memory devices such as ROMs. Other unsuccessful challenges included contentions that a player's participation withdrew the game from copyright eligibility because the player was a "co-author," that plaintiffs were attempting to copyright utilitarian aspects such as ROMs, and that the plaintiff's failure to register the underlying program was fatal to the

22 See, e.g., Williams, 685 F.2d at 873; Stern, 669 F.2d at 853. Section 102(a) of The Copyright Act provides, in pertinent part:

Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include . . . literary works . . . pictorial, graphic, and sculptural works . . . motion pictures and other audiovisual works.

17 U.S.C. § 102(a) (1988); see also infra note 111 (discussion of "originality" requirement). The Copyright Act defines "fixed" as: "A work is 'fixed' in a tangible medium of expression when its embodiment in a copy . . . is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration." 17 U.S.C. § 101 (1988).

23 See, e.g., Stern, 523 F. Supp. at 639 (while audiovisual display emanates from computer program, display not necessarily unoriginal; audiovisual display appropriate for copyright even if underlying program is not copyrighted).

24 See, e.g., Williams, 685 F.2d at 874 (statutory requirement satisfied, notwithstanding defendant's contentions that transient images of game were not fixed); Stern, 669 F.2d at 855 (game's memory devices satisfy statutory requirement of copy in which work is fixed); Midway Mfg. Co. v. Dirkschneider, 543 F. Supp. 466, 479-80 (D. Neb. 1981) (fact that audiovisual works could not be viewed without machine did not mean works were not fixed, despite defendant's categorization of displays as "ephemeral projections on a cathode ray tube").

25 See, e.g., Midway Mfg. Co. v. Artic Intl', Inc., 704 F.2d 1009, 1011-12 (7th Cir.) (analogizing player to television viewer who merely changes channels, making no creative contribution), cert. denied, 464 U.S. 823 (1983); Williams, 685 F.2d at 874 (court disagreeing with contention that player is co-author, stating that "there is always a repetitive sequence of a substantial portion of the sights and sounds of the game, and many aspects of the display remain constant from game to game regardless of how the player operates the controls"); Stern, 669 F.2d at 856 (player's participation does not withdraw audiovisual work from copyright eligibility).

26 See, e.g., Williams, 685 F.2d at 874 (court refers to plaintiff's effort to protect artistic expression in original works which have met statutory fixation requirement through embodiment in ROM); Midway Mfg. Co. v. Artic Intl', Inc., 547 F. Supp. 999, 1008-09 (N.D. Ill. 1982) (court rejected argument that plaintiff was trying to copyright ROM, holding that only copyright protection was sought on audiovisual aspects of game that appeared on screen), aff'd, 704 F.2d 1009 (7th Cir. 1983).
copyrightability of the screens. The courts’ continued rejection of these arguments leaves no doubt as to the validity of the audiovisual copyrights of user interfaces generated by video games.

C. User Interface as a Separately Protectable Entity

Notwithstanding the unambiguous holdings in the video game cases that display screens are separately copyrightable and registrable as audiovisual works, a California district court's decision in *Broderbund Software, Inc. v. Unison World, Inc.* sparked considerable confusion in this area. In *Broderbund*, the plaintiff sued for, *inter alia*, infringement of the audiovisual copyright it held for screen displays generated by its “Print Shop” program. Although the *Broderbund* court’s finding of infringement was based on the audiovisual copyright of the screens, it would appear that the court, in dictum, misinterpreted and broadened the holding in *Whelan* by equating computer program copyright protection of the structure, sequence, and organization of a program with protection of the screen outputs. Thus, the *Broderbund* court implied that a copyright on a program may protect the screens it generates, notwithstanding the possible lack of a copyright on such screens.

A Georgia federal court, in *Digital Communications Associates, Inc. v. Softklone Distributing Corp.*, declined to follow this
rationale, concluding that *Broderbund* overexpanded and erroneously interpreted *Whelan.* The *Softklone* court took the narrower view that a copyright in a computer program does not extend to cover the screen displays that program generates, and, therefore, separate registration is necessary.

The *Broderbund* and *Softklone* courts injected considerable confusion into the debate over whether the user interface is a copyrightable entity in and of itself, or merely an element of the overall program. In response to these conflicting holdings, the Copyright Office issued a notice stating that all copyrightable expression, including screen displays embodied in a computer program and owned by the same claimant, is to be considered a single work and, therefore, should be registered on a single application form. As a result, it would no longer seem possible to register

main menu status screen not as an audiovisual work, but as a compilation. *Id.* at 453. The court upheld the validity of the copyright and found that defendant's program infringed. *Id.* at 465. The Copyright Act defines a "compilation" as: "a work formed by the collection and assembling of preexisting materials or of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship. . . . includ[ing] collective works." 17 U.S.C. § 101 (1988).

*See Softklone, 659 F. Supp. at 455. "The *Whalen* [sic] case did not stand for, as *Broderbund* believed it to, the proposition that screen displays are protected by the computer program's copyright . . . ." *Id.* The court further stated that the "*Whelan* court did not specifically extend a computer program's copyright protection to its screen displays." *Id.* The *Whelan* court addressed the issue of screen displays and followed the precedent of the video game cases, *see supra* notes 28-37 and accompanying text, by finding that screen displays are covered by separate copyrights. *Whelan, 797 F.2d* at 1244. "It is true that screen outputs are considered audio-visual works under the copyright code, . . . and are thus covered by a different copyright than are [the] programs [creating the display], which are literary works." *Id.* (citations omitted).

The *Whelan* court did, however, state that similarity of screen displays is admissible as evidence in a program infringement inquiry. *Id.* at 1244-45. Although completely different (and therefore non-infringing) programs can generate the same screen displays, the fact that there is similarity in screen displays has probative evidentiary value of similarity of the underlying programs. *Id.* Screen display similarity is inferential, rather than direct, evidence of program similarity. *Id.* at 1244.

Notwithstanding the criticism of its analysis in *Broderbund*, the District Court for the Northern District of California recently reaffirmed its interpretation of *Whelan*. *See Telemarketing Resources v. Symantec Corp., 12 U.S.P.Q.2d (BNA) 1991, 1993 (N.D. Cal. 1989) ("copyright protection applies to the user interface, or overall structure and organization of a computer program, including its audiovisual displays, or screen 'look and feel'") (citing *Whelan* and *Broderbund*).

*See Softklone, 659 F. Supp. at 455. "The court . . . concludes, consistent with those cases finding the audiovisual screen displays of a video game to be separately copyrightable, that screen displays generated by computer programs are not direct copies or 'reproductions' of the literary or substantive content of the computer programs." *Id.*

*See Registration Decision: Registration and Deposit of Computer Screen Displays, 53 Fed. Reg. 21,817 (1988) (single registration "covers" screen displays as well as program
separate copyrights for both the program and the screen displays generated by the program.\textsuperscript{50}

Although the Copyright Office rule may be construed to mean that the user interface is merely an element of the program, and thus not capable of separate protection, a Connecticut federal court in \textit{Manufacturers Technologies, Inc. v. CAMS, Inc.},\textsuperscript{61} interpreted the single registration requirement as creating the legal fiction of accomplishing two interrelated yet distinct registrations: one covering the program code and one covering the user interfaces generated thereby.\textsuperscript{62} As such, there may be findings of infringement of the user interface notwithstanding the lack of infringement of the program code.\textsuperscript{63} This view is consistent with the realities of programming, since user interfaces can be cloned by writing a completely different program.\textsuperscript{64} While similarity of interfaces may evidence that the underlying code was in fact copied, such evidence alone is not dispositive.\textsuperscript{65} Thus, the approach of the court in \textit{Manufacturers Technologies} protects the user interface as a separately copyrightable entity, while following the Copyright Office's procedure of allowing only one registration per work.

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\textsuperscript{50} See Manufacturers Tech., Inc. v. CAMS, Inc., 706 F. Supp. 984, 991 (D. Conn. 1989).

\textsuperscript{51} 706 F. Supp. 984 (D. Conn. 1989).

\textsuperscript{52} Id. at 993. The benefits of this approach are threefold: (1) it allows the court to focus on the copyrightable expression of each registration; (2) recognizes the fundamental copyright distinction between program and display screen; (3) conforms to the actual Copyright Office registration procedures. See id.

\textsuperscript{53} See id. In \textit{Manufacturers Tech.}, plaintiff held separate copyrights on the screen displays and the underlying program (issued before Copyright Office's single registration notice). See id. at 988. The court held that defendant's screen displays "infringed the copyright of the screen display registration . . . as well as the copyright of the screen displays subsumed within the registration of [the] . . . program." Id. at 1002. It is submitted, therefore, that the separate copyright on the screen display was not necessary for the finding of infringement, keeping with the single registration analysis of the court.

\textsuperscript{54} See, e.g., Stern Elecs., Inc. v. Kaufman, 669 F.2d 852, 855 (2d Cir. 1982) (many different programs can produce same results); Midway Mfg. Co. v. Strohon, 564 F. Supp. 741, 749 (N.D. Ill. 1983) (simple to design different program which produces same audiovisual result).

\textsuperscript{55} See Whelan, 797 F.2d at 1244. Similarity of screen displays can be used as circumstantial, rather than direct, evidence to show that a party copied the underlying program. See id. This is true even though many underlying programs can create the same screen output. See id.; see also Comment, \textit{Proving Copyright Infringement of Computer Software: An Analytical Framework}, 18 Loy. L.A.L. Rev. 919, 945-46 (1985) (suggests evidence of substantial similarity of audiovisual sights and sounds should create presumption that underlying program was copied).
The analysis in Manufacturers Technologies may have been unnecessary in light of recent statements made by the United States Court of Appeals for the District of Columbia Circuit in Atari Games Corp. v. Oman. In Oman, the Copyright Office refused to register an audiovisual copyright for the screens generated by Atari's "Breakout" game due to an alleged lack of originality, yet suggested that Atari still could register the underlying computer program. When Atari sued the Register of Copyrights, the district court found no abuse of discretion. In reversing, the District of Columbia Circuit concluded that "registering a claim in the program would not securely protect [the screen displays] for which Atari seeks . . . [a] copyright." Thus, the dual registration rationale of Softklone appears to have resurfaced. Although the Oman court did not expressly rule on the validity of the Copyright Office's single registration requirement and its effect in an infringement suit, its conclusion that a program copyright will not protect the screen displays certainly casts doubt on that procedure.

Most recently in Lotus Development Corp. v. Paperback Software International, the defendant argued that the Massa-
Massachusetts District Court lacked subject matter jurisdiction because the plaintiff, Lotus, had not registered, copyrighted, or patented the screen displays of its “1-2-3” spreadsheet program. The court acknowledged that Lotus attempted to register separately the screen displays as audiovisual works but had been refused by the Copyright Office, in keeping with its “one registration per work” procedure. The question in *Lotus* was whether the user interface of a program should be entitled to either patent or copyright protection, and the court answered this question in the affirmative.

In light of the preceding analysis, it is submitted that there is a lack of consistent precedent on the severability of the user interface from its underlying program. The Copyright Office will only accept one registration on the program, which it asserts will cover the screens as well. The District of Columbia Circuit has since stated otherwise, although it is unclear whether that court considered or was even cognizant of the Copyright Office’s recent position. Regardless of the registration procedure ultimately settled upon, it is submitted that it is essential for all courts to establish that the user interface and its underlying program are separately protectible entities in an infringement action in order to protect fully the user interface, even where there has been no infringement on the program itself.

**D. Scope of Protection of the User Interface**

The scope of protection to be afforded user interfaces in an infringement action, remains a clouded issue. While the law is well settled regarding the copyrightability of video game screens, which inherently are highly artistic and expressive, the separate questions of copyrightability and the resulting scope of protection to be afforded predominantly textual and functional works, such as menus or status screens, remains unsettled. Functionally oriented

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67 *Id.* at 81.
68 See supra note 49 and accompanying text.
69 See Forsten, *supra* note 3, at 643-44.
70 See *Lotus*, 740 F. Supp. at 58. Judge Keeton attempted to formulate the copyrightability analysis of plaintiff’s “1-2-3” program into three elements:
   FIRST, in making the determination of “copyrightability,” the decisionmaker must focus upon alternatives ... along the scale from the most generalized conception to the most particularized, and choose some formulation—some concep-
textual materials alone, without audiovisual or graphic material, are akin to factual works, which historically have received a narrower range of protection.  

In order to establish copyright infringement, a plaintiff must show both the ownership of a valid copyright and that the defendant copied the work. Because copying is rarely provable by direct evidence, it may be inferred circumstantially with a showing of access and substantial similarity between the works. However, it is the substantial similarity between the protected aspects of the plaintiff's work and the defendant's work which must be proven, and not just a showing of overall similarity.  

It is axiomatic that a copyright protects only the expression of ideas and not the ideas themselves. When defining the scope of
copyright protection for a given work, it is essential to determine which elements of the work constitute the protected expression of an idea, rather than the idea itself. This analysis is usually not black-and-white; rather, the elements in question exhibit many shades of gray.

The accompanying doctrine of merger provides that when an idea is indistinguishable from its expression, the two have "merged" and the expression, therefore, is unprotectable. Where the expressive features of an idea are a standard treatment of, indispensable to, inseparable from, or necessarily follow from that idea, such features are not protectable. The scope of copyright protection only extends to the protected work's artistic features; not the utilitarian or mechanical aspects of the work; copying unprotectable ideas does not constitute infringement, no matter how similar the works may appear.

It is, therefore, essential in determining the appropriate scope of protection, to filter out the unprotected elements from the protected ones, and then to compare the copyrighted work with the accused work. When text based menu and status screens are at

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policy corollary to this axiom permitting all to use freely ideas contained in a copyrightable work, so long as the protected expression itself is not appropriated”) (citations omitted).

76 See Sid & Marty Krofft, 562 F.2d at 1163.
77 See Ashton-Tate Corp. v. Ross, 728 F. Supp. 597, 601 (N.D. Cal. 1989), aff'd, 916 F.2d 516 (9th Cir. 1990). The more expression a work is considered to have, the broader the scope of protection will be. See Sid & Marty Krofft, 562 F.2d at 1168.
78 See Herbert Rosenthal Jewelry Corp. v. Kalpakian, 446 F.2d 738, 741-42 (9th Cir. 1971) (idea of jewel-encrusted bee pin indistinguishable from expression).
79 Data East, 862 F.2d at 208. The district court analyzed the copyrighted karate video game with the accused work, and found certain features which were inherent to either the sport of karate itself or computer restraints, to wit, the game procedure, common karate moves, background scenes, a referee, bonus points, and computer graphics. Id. at 209. In reversing the finding of infringement, the Ninth Circuit stated that the district court did not give appropriate weight to defendant's arguments that similarities between the screen displays resulted from unprotectable expression, and the finding of protectable substantial similarity was therefore clear error. Id.; see also Frybarger v. International Business Machs. Corp., 812 F.2d 525, 529-30 (9th Cir. 1987) (summary judgment of noninfringement where similarities of video games at issue were unprotectable ideas and indispensable expression); Landsberg v. Scrabble Crossword Game Players, Inc., 736 F.2d 485, 489 (9th Cir.) (discussion of scenes a faire doctrine, where "second author does not infringe even if he reproduces verbatim the first author's expression, if that expression constitutes 'stock scenes or scenes that flow [] necessarily from common unprotectable ideas'" (citations omitted)), cert. denied, 469 U.S. 1037 (1984).
80 Durham Indus., Inc. v. Tomy Corp., 630 F.2d 905, 913 (2d Cir. 1980).
81 See Rosenthal Jewelry, 446 F.2d at 741-42.
82 See Lotus, 740 F. Supp. at 67 ("court need only identify elements that are copyrightable, and then determine whether elements, considered as a whole, have been impermissibly
issue, what is important is not whether there is substantial similarity in the total concept and feel of the works, but whether the protectable expression in the plaintiff's work is substantially similar to the comparable parts of the defendant's work. Graphical and artistic works lend themselves to a broader analysis whereby the work may be viewed as a whole. What, then, are the protected expressive elements of the user interface? Although there are no bright-line rules, recent court decisions have shed light on some of these protected elements.

Generally, when the computer hardware package with which the program is designed to run constrains the manner in which functions can be implemented and expressed, a copyright will not protect a particular programmer's choice. Thus, in Manufacturers Technologies, the court held that certain internal aspects of the screen displays, such as using the space bar and backspace keys to parse through a field of listed selections, are not copyrightable. Further, the Manufacturers Technologies court held that the use of a screen format which is uniform throughout all the screens generated by a program is not copyrightable when the choice of formats is due to logical placement of terms therein and limited by the size of the screen. As such, there can be no infringement, even if the accused program deliberately adopts the plaintiff's format. For example, in Lotus, the court found that the number of keys available to invoke the menu command system was easily limited, and thus not protected.

The use of conventions which are standard or even commonplace in the computer industry have been held to be exempt from
copyright protection. In Telemarketing Resources v. Symantec Corp., copyright protection was refused for the use of pull down windows in the plaintiff's outlining program for this reason. Additionally, protection was not afforded to the screen display features which were inherent to outlining programs, including the plaintiff's use of menu terms and functions performed. Further, the plaintiff could not claim exclusivity of the use of a certain color, since the rules of the Copyright Office specifically preclude from copyright registration "mere variations of typographic ornamentation, lettering or coloring."

Under the doctrines of merger and scenes a faire, a limit on the number of ways an idea can be expressed will limit the protection of such expression. Thus, in Lotus, the court found that there are a limited number of ways a computer screen could be made to resemble a spreadsheet. The use of a rotated "L," for example, was present in most expressions and was therefore not a protectable element.

It appears, however, that while individual elements receive little or no protection due to their inherence or necessity in a partic-

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90 Id. at 1996.
91 Id.; see also Plains Cotton Coop. Ass'n v. Goodpasture Computer Serv., Inc., 807 F.2d 1256, 1262 (5th Cir.) (motion for preliminary injunction denied where similarities of programs are due to external market constraints), cert. denied, 484 U.S. 821 (1987); Ashton-Tate Corp. v. Ross, 728 F. Supp. 597, 601-02 (N.D. Cal. 1989) (list of user commands not protectable expression since many were common commands already available on other programs), aff'd, 916 F.2d 516 (9th Cir. 1990); Forsten, supra note 3, at 659 (basic commands, error messages, and status messages may have limited range of clear, understandable expression).
A copyright law doctrine referring to incidents, characters or settings which are as a practical matter indispensable, or at least standard, in the treatment of a given topic . . . . Such material, in an otherwise copyrightable work, is considered unprotected by copyright because it would be natural for it to appear in works dealing with similar subjects or situations.
Id.
94 See supra notes 78-79 and accompanying text.
95 Lotus, 740 F. Supp. at 66.
96 Id. The court noted that while Lotus' "1-2-3" and its competitors' "VisiCalc" and "Excel" (not at issue in this suit) shared the general idea of an electronic spreadsheet but expressed the idea in substantially different ways, they all used a rotated "L" to make the computer screen resemble a spreadsheet. Id. Thus, this shared element failed the second part of Judge Keeton's test, see supra note 70, and was not protectable. Lotus, 740 F. Supp. at 66.
ular type of program, the overall arrangement of the elements may constitute protected expression. In *Lotus*, the court stated that, when viewed in its entirety, the menu command structure, including the choice of terms, their structure and order, and presentation on the screen, was copyrightable. In *Softklone*, the court noted that the use of a screen to convey program status, the use of a command driven program, and the typing of two symbols to activate a specific command were all unprotectable ideas. The court found, nonetheless, that protectable expression existed in the arrangement of program command terms on the screen, as well as the highlighting and capitalization of two specific letters of the command terms which are used to input the command. Similarly, in *Manufacturers Technologies*, the sequencing and flow of various menu screens generated by the program was found to be protectable expression of the user interface.

When graphical and artistic features predominate, the screens are more likely to be considered as a whole. In *Broderbund*, the court found that the screens had been created in light of primarily artistic and aesthetic considerations, thereby rejecting the defendant's argument that the utilitarian considerations constrained the choice of expression. The court viewed the accused and protected works as a whole, finding infringement due to substantial similarity of the works overall.

Copyright protection, therefore, has been afforded to expressive graphical representations, the arrangements of text, and the sequencing and flow of various screens of the user interface. Courts have been particularly sensitive to denying protection

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98 Id. at 67-68.
100 Id. The *Softklone* court held that the defendant's status screen was substantially similar to the plaintiff's, as it captured its "'total concept and feel.'" Id. at 465 (citations omitted). Although the court premised protection on a compilation copyright on the screen which was registered prior to the single registration notice, it is submitted that such protection would be granted today to a similar screen whose copyright protection is derived from a single registration on its underlying program. See *supra* note 49 and accompanying text.
101 *Manufacturers Tech.*, 706 F. Supp. at 994. The court held that the plaintiff's screens, which guided the user through the steps of estimating the cost of manufacturing certain products, embodied protectable expression notwithstanding the functional nature of the cost-estimating process. Id.
102 *Broderbund*, 648 F. Supp. at 1134. The court termed the artwork as "aesthetically pleasing," and stated that the total user interface provided a "significant element of entertainment for the user (often a child)." Id.
103 Id. at 1137.
104 See *supra* notes 100-02 and accompanying text.
where functionality constrains expression.\textsuperscript{105}

II. DESIGN PATENT PROTECTION OF USER INTERFACES

A design patent may be granted for "any new, original and ornamental design for an article of manufacture."\textsuperscript{106} While a utility patent protects the functional aspects of an invention, a design patent protects a product's ornamental aspects.\textsuperscript{107} Ornamentality requires that the design be of "aesthetic skill and artistic conception."\textsuperscript{108}

In order to be patentable, the design must pass the rigorous test of being unobvious over the prior art.\textsuperscript{109} That is, a designer of ordinary capability who designs articles of the type at issue must be able to show that the design is not obvious in light of all known prior designs.\textsuperscript{110} This is a much higher hurdle to clear than under copyright law, which requires only that the work be original, not

\textsuperscript{105} See supra notes 85-88 and accompanying text.

\textsuperscript{106} 35 U.S.C. § 171 (1988). Articles of manufacture are broadly defined as "anything made 'by the hands of man' from raw materials, whether literally by hand or by machinery or by art." In re Hruby, 373 F.2d 997, 1000 (C.C.P.A. 1967) (reversing rejection of design patent application for water fountain, where design was formed by water moving in fountain).


\textsuperscript{108} Blisscraft of Hollywood v. United Plastics Co., 294 F.2d 694, 696 (2d Cir. 1961). While the courts and PTO generally will not impose subjective taste when considering ornamentality, the PTO will reject patent applications "which disclose subject matter which could be deemed offensive to any race, religion, sex, ethnic group, or nationality, such as those which include caricatures or depictions." U.S. Patent & Trademark Office, Manual of Patent Examining Procedure § 1504 (5th ed., rev. Oct. 4, 1986) [hereinafter MPEP].

\textsuperscript{109} See 35 U.S.C. § 103 (1988). The patent statute provides in pertinent part:

A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Id. This statute is directly applicable to design patent cases through 35 U.S.C. section 171. "The provisions of [title 35] relating to patents for inventions shall apply to patents for designs, except as otherwise provided." Id. § 171.

\textsuperscript{110} See, e.g., Litton Sys., Inc. v. Whirlpool Corp., 728 F.2d 1423, 1443 (Fed. Cir. 1984) (design patent on microwave oven held unobvious in light of prior art).
copied, and that the author himself generated it.\textsuperscript{111} Furthermore, a design that is primarily functional or dictated solely by functional considerations is not proper subject matter for design patent protection.\textsuperscript{112} This is analogous to copyright law, inasmuch as protection is not granted where functionality constrains expression.\textsuperscript{113}

The owner of a design patent has the right to exclude others from making, selling, or using the patented invention for a term of fourteen years, whereas copyright protection has a much longer duration.\textsuperscript{114} Also, while a copyright defendant may be able to escape liability by showing independent creation, an accused design patent infringer cannot.\textsuperscript{115}

\begin{itemize}
\item \textsuperscript{111} See W. Patry, Latman's The Copyright Law 18 (1986). Patry wrote:
\begin{quote}
[It] has become firmly established in the case law that the requirement of 'originality' does not refer to a desired modicum of artistic merit, novelty, or 'nonobviousness' (as with patents), but rather to the origination of the work, viz., that the work has been "independently" created, and not merely copied.
\end{quote}
\begin{itemize}
\item \textsuperscript{112} See Barofsky v. General Elec. Corp., 396 F.2d 340, 342 (9th Cir. 1968), cert. denied, 393 U.S. 1031 (1969); Hygienic Specialties Co. v. H. G. Salzman, Inc., 302 F.2d 614, 618 (2d Cir. 1962). This is not to say that functional articles cannot have design patents granted on their ornamental features. However, the features upon which the design patent is granted cannot be dictated by functionality. Barofsky, 396 F.2d at 342; see also Avia Group Int'l, Inc. v. L.A. Gear Cal. Inc., 853 F.2d 1557, 1563 (Fed. Cir. 1988) (patents claiming ornamental design for athletic shoes held valid on summary judgment motion); Celebrity, Inc. v. A & B Instrument Co., 573 F.2d 11, 13 (10th Cir.) ("decorative, ornamental, or design feature was dominant over, and separate from, the functional aspects" (citation omitted)), cert. denied, 439 U.S. 824 (1978).
\item \textsuperscript{113} See Lotus, 740 F. Supp. at 57 ("'functionality' of an article does not itself support copyrightability"); supra notes 95-97, 105 and accompanying text.
\item \textsuperscript{114} 35 U.S.C. §§ 173, 271 (1988). A design patent is infringed "if in the eye of an ordinary observer, giving such attention as a purchaser usually gives, two designs are substantially the same, if the resemblance is such as to deceive such an observer, inducing him to purchase one supposing it to be the other." FMC Corp. v. Hennessey Indus., Inc., 836 F.2d 521, 527-28 (Fed. Cir. 1987) (quoting Gorham v. White, 81 U.S. 511, 528 (1871)).
\item \textsuperscript{115} See Blair v. Westinghouse Elec. Corp., 291 F. Supp. 664, 670 (D.D.C. 1968), aff'd sub nom. Blair v. Dowd's, Inc., 438 F.2d 136 (D.C. Cir. 1970); Fred Fisher, Inc. v. Dillingham, 298 F. 145, 147 (S.D.N.Y. 1924) ("[o]ne may infringe a patent by the innocent reproduction of the machine patented, but the law imposes no prohibition upon those who, without copying, independently arrive at [that] which ha[s] been copyrighted"). "It is . . . elementary, that an infringement may be entirely inadvertent and unintentional and without knowledge of the patent. In this respect the law of patents is entirely different from the law of copyright." Blair, 291 F. Supp. at 670. While intent need not be shown in a patent infringement action, it may allow the plaintiff to be awarded treble damages and/or attorney's fees. See Rosemount, Inc. v. Beckman Instruments, Inc., 727 F.2d 1540, 1547 (Fed. Cir. 1984) (award for treble damages and attorneys' fees under 35 U.S.C. §§ 284 and 285 upheld where defendant infringed "knowingly, deliberately, willfully and wantonly" without investigation of pat-
Recently, design patents have been issued to Xerox Corp., which cover icons representing functions used in conjunction with computer screen displays. These icons are highly graphical, and to the extent they are "ornamental," constitute proper subject matter for design patents. Further, a computer screen upon which the icons are embodied may properly be considered an article of manufacture. It is debatable, however, whether icons such as these are dictated solely by functional considerations, which in turn may preclude them from being properly patentable. If the use of such icons is found to be dictated by function, the validity of the design patents may rest upon the extent of expressive graphical qualities contained therein.

III. Doctrine of Election

Design patents protect similar ornamental and expressive as-
pects of a work as do copyrights, and both types of protection are available to an author-inventor who meets the requirements previously discussed. Arguments have been made, however, that an author-inventor must elect between copyright or design patent protection when both modes are available, rather than enjoying the benefits of both. The usual rationales offered by those who advocate election of protection are that the methods of procedure, the terms of protection, and the penalties of infringement are so different that the author-inventor must choose one mode of protection or the other. Additionally, the term of a copyright is much longer than that of a design patent, and thus it is argued that the effect of a copyright is to extend the patent monopoly past its expiration date.

In In re Yardley, the Court of Customs and Patent Appeals addressed the doctrine of election issue and held that an author-inventor need not elect between design patent and copyright protection. The court found that overlapping modes of protection could exist, and that it would be contrary to the intent of Congress.

See generally Kline, supra note 123, at 341. Once a patent expires, it cannot be enforced so as to prevent the public from practicing the invention, which in the design patent case, would be the copying of the design. See In re Yardley, 493 F.2d 1389, 1395 (C.C.P.A. 1974) (Commissioner of PTO argued when Supreme Court stated, in Sears, Roebuck & Co. v. Stiffel Co., 376 U.S. 225 (1964), “the [design] patent expires the monopoly created by it expires, too, and the right to make the article—including the right to make it in precisely the shape it carried when patented—passes to the public,” it precluded allowance of copyright on patented articles since copyright would deny public right to make article); see also In re Blood, 23 F.2d 772 (D.C. Cir. 1927) (held that one who obtained design label copyright on certain hosiery ticket could not obtain design patent on same item, due to extension of monopoly). Note that in 1927, copyright registration of commercial prints and labels was handled by the Patent Office; this function was transferred to the Copyright Office in 1939. See Kline, supra note 123, at 288 n.29.

493 F.2d 1389 (C.C.P.A. 1974).
to require an election. Therefore, it is possible to secure both a design patent and copyright on elements of a user interface screen display, assuming that the statutory and procedural requirements are met. It may in fact be essential to secure both types of protection because in the event a design patent on a particular element is found to be invalid, the copyright may provide backup protection.

IV. POLICY CONSIDERATIONS

There is a distinct tension between the policy of fostering creativity by granting proprietary protection to the creator of a work and the policy of allowing others to use freely the ideas embodied in that work. This holds true whether the protection granted is

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129 See id. "Congress has not provided that an author-inventor must elect between securing a copyright or securing a design patent." Id. The court found that although copyrights and design patents provide different protection for overlapping subject matter, the mere fact that the copyright will persist beyond the term of the design patent does not provide a sound basis for rejecting the design patent application. Id. at 1398.

130 See Id. at 1389; see also 37 C.F.R. § 202.10(a) (1989). It is incumbent that the author-inventor register the copyright prior to applying for a design patent, since current Copyright Office practice provides that:

The potential availability of protection under the design patent law will not affect the registrability of a pictorial, graphic, or sculptural work, but a copyright claim in a patented design or in the drawings or photographs in a patent application will not be registered after the patent has issued.

Id. Further, when the materials submitted to the PTO in an application for a design patent contain a copyright notice, the applicant must expressly waive his objections to "the facsimile reproduction by anyone of the patent document or the patent disclosure . . . but reserves all other copyright rights whatsoever." MPEP, supra note 108, § 1512.

131 See 35 U.S.C. § 282 (1988). Although an issued patent enjoys a presumption of validity, the presumption may be overcome by a showing by the accused infringer that the patent has not met any one or more of the statutory requisites of patentability (e.g. unobviousness) and is therefore invalid. See Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1375 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987). Invalidity must be proved by clear and convincing evidence. Id.

A copyright registration is prima facie evidence of a valid copyright, 17 U.S.C. § 410(c) (1988), which can be rebutted by, inter alia, evidence that the "work was copied from a public domain source or from other copyrighted works, [and] evidence that defendant purchased a work identical to plaintiff's work before plaintiff's work was created." See W. PATRY, supra note 111, at 185-88 and citations therein. While a design patent on a screen display may be held invalid due to, inter alia, being obvious in light of the prior art, it is submitted that a corresponding copyright will be upheld as long as the author's work is original notwithstanding its obviousness.

132 See Whelan, 797 F.2d at 1237 (purpose of copyright law is to create balance between protection and competition); Lotus, 740 F. Supp. at 52 (copyright monopolies not granted for purpose of rewarding authors, but to serve public welfare by encouraging authors to generate new ideas and disclose them to public).
through copyrights or patents; the substantive and procedural laws have been shaped so as to strike the most equitable balance. It is submitted that the issue of standardization is of paramount importance and should be seriously considered when analyzing the protection of computer user interfaces. As certain user interfaces gain popularity due to their user-friendliness, they essentially become de facto industry standards. Competing software packages will not be successful in the market if they are too far afield from the accepted programs. It is impractical to expect consumers to master the nuances and intricacies of a different interface methodology.\textsuperscript{3}

Although allowing competitors to obtain a free ride on the coattails of a successful program may seem unfair,\textsuperscript{1} granting a wide scope of protection to a de facto standard interface results in the granting of an arguably undeserved monopoly.\textsuperscript{2} Moreover, the idea/expression dichotomy, which is so prevalent in software copyright analyses, is further amplified when the expression seemingly embodied in the screen display depends in reality upon the functionality of the interrelated hardware devices.

Aside from the early video game cases, most user interface cases have focused on programs geared toward a specialized mar-

\textsuperscript{3} See Look and Feel Questions, supra note 8, at 14 ("user friendly . . . implies a market reality that a competing program will not be successful against an earlier entrant if the second program imposes upon users significant costs of learning a new regime of keystrokes and commands"). The most common example of a standard interface is the ubiquitous "QWERTY" keyboard, which gleams its name from the first six alphabet keys. See W. Rosch, supra note 12, at 246-49. An alternative to QWERTY is the Dvorak-Dealy layout, which has been tested to be more efficient. See id. The Dvorak-Dealy layout has never been accepted, and since most people will not want to re-learn how to type, it probably never will be. See id.; see also Forsten, supra note 3, at 661 (once initial time and effort expended on learning to use program effectively, there is little incentive to switch to another competing program if additional time and effort would be required).

It was recently argued by the defendants in Lotus that plaintiff's "1-2-3" program for electronic spreadsheets had become a de facto industry standard for all electronic spreadsheets, and that defendants' "V-P Planner" had to be compatible to be a commercial success. Lotus, 740 F. Supp. at 78. The court countered this argument by citing Microsoft Corporation's "Excel" program, which includes a translator capability, enabling a user to go from "1-2-3" to Excel. See id. Thus, according to the court, companies are not necessarily foreclosed from competing for "1-2-3" customers, notwithstanding allegations of "1-2-3" being a de facto standard. See id.

\textsuperscript{1} See Look and Feel Questions, supra note 8, at 14.

\textsuperscript{2} See id. at 15 (analogizing copyright protection of de facto standard interface to copyright on QWERTY keyboard); see also Forsten, supra note 3, at 640 ("[a]t stake is whether software companies will be able to produce computer programs similar to market-leading programs or whether large market-share programs will be able to dominate, and essentially monopolize, the commercial computer software market").
ket, although the analyses used should have general applicability to any user interface infringement. Of particular significance is the recent district court decision in *Lotus*, in which Lotus's enormously popular "1-2-3" electronic spreadsheet program was found to be protectable by copyright and the user interface was held to have been infringed by the defendants' "V-P Planner." On the strength of this favorable ruling, Lotus immediately filed suit against two other spreadsheet software publishers. It is apparent that Lotus's strength in the marketplace has been bolstered considerably by the results of this case.

Other recent cases which have addressed user interface infringement questions in relation to extremely popular, and perhaps de facto industry standard programs, are *Apple Computer, Inc. v. Microsoft, Corp.* and *Xerox Corp. v. Apple Computer, Inc.* Both cases, however, did little to clarify this unsettled and highly complex area of copyright law. The *Lotus* decision, on the other hand, most likely will result in policy decisions having repercussions throughout the software industry.

**Conclusion**

There remains uncertainty surrounding the legal protection of user interfaces generated by computer programs. Copyright law appears to be a powerful way of securing such protection. Nevertheless, the status of the user interface and the scope of protection the user interface merits under traditional copyright doctrines are not entirely predictable. Alternatively, design patents may provide a means of protecting graphical aspects of the interface. However, the usefulness of design patents in this area appears to be limited due to the high threshold of patentability as compared to

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136 See *Lotus*, 740 F. Supp. at 84. Most of the lengthy opinion exhaustively addressed the issue of copyrightability of computer programs, since defendants admitted to copying the particular elements which were ultimately found to be protected. See id. at 68.

137 See *Lotus Sues 2 on Copyright Violation*, N.Y. Times, July 3, 1990, at D1, col. 6.

138 Id.

139 717 F. Supp. 1428 (N.D. Cal. 1989). In *Microsoft*, the plaintiff, Apple Computer, claimed that Microsoft's Windows 2.03 and Hewlett-Packard's New Wave operating environments infringed upon its copyrighted graphic user interface. See id. at 1429. The court granted partial summary judgment on the infringement claim. Id. at 1435.

140 734 F. Supp. 1542 (N.D. Cal. 1990). In *Xerox*, the plaintiff alleged that it, and not the defendant, Apple Computer, was the true owner of the copyrights to various popular graphical user interfaces employed by Apple Computer in some of its products. Id. at 1543. The court found that plaintiff's allegations did not justify declaratory relief. Id. at 1547.
copyrightability. Furthermore, the validity of design patents for user interface elements has yet to be upheld in litigation. At least one commentator has called for the enactment of special legislation aimed at providing proprietary protection of programs. Any future legislation should also address the protection of the user interface, and attempt to strike a balance between the safeguards that will serve as an incentive for the computer software industry to continue to produce quality products while ensuring the continued free flow and use of ideas.

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14 See Rines, supra note 6, at 6-16.